

PRIVILEGED AND CONFIDENTIAL
ENVIRONMENTAL INVESTIGATIONS
ROTH BROS. SMELTING CORP. - PLANT 2
EAST SYRACUSE, NEW YORK

by

H&A of New York
Rochester, New York

for

Nixon, Hargrave, Devans & Doyle
Rochester, New York

File Nos. 70185-40 and 70185-42

May 1991



The enclosed Environmental Investigations Reports were performed at the Roth Bros. Smelting Corporation for Plant 2. Two investigations were performed, and the results are presented in two sections. Section 1 presents the results of the initial environmental investigation; Section 2 presents the results of an additional investigation, completed as a result of findings and recommendations in the initial investigation.



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- SECTION 1 Environmental Investigation
 Roth Bros. Smelting Corporation
 Plant 2
 East Syracuse, New York
- SECTION 2 Additional Environmental Investigation
 Roth Bros. Smelting Corporation
 Plant 2
 East Syracuse, New York



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SECTION 1 OF 2

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FOIL204210

PART 1

EXECUTIVE SUMMARY

H&A of New York performed an environmental investigation of Plant 2 of the Roth Bros. Smelting Corporation site in East Syracuse, New York. Roth Bros. Smelting Corporation is a secondary lead smelter which smelts and refines lead from metallic scrap, drosses and production by-products. Plant 2 has operated since the 1950's. The intent of the investigation was to evaluate several site areas for the potential presence of hazardous materials.

Based on site information available and a walkover at the outset of this project, the investigation was performed to address the following areas of concern: (1) an area which received fill of an unknown nature over the time period from 1976 to 1979; (2) a truck maintenance area; (3) SPDES Outfalls 001 and 002 ditches; (4) a former transformer location; and (5) the southwest corner of Plant 2. Background/native soils were also collected. In order to evaluate these areas and based on available information, H&A developed a site-specific investigation program consisting of a site walkover, review of readily-available information regarding site use, history and local geologic setting, a limited subsurface exploration and sampling program and laboratory analyses.

In summary, 34 samples were collected and analyzed for total metals associated with the smelting process (lead, chromium and cadmium), TCLP metals (lead, chromium and cadmium), oil and grease (by EPA Method 9070) which is regulated under SPDES discharge limits, and PCBs (by EPA Method 8080) which may be associated with some of the compounds which are smelted. The oil and grease analyses indicated concentrations above background/native soils were found in several areas; however, the highest concentrations and those with visibly stained soils were observed at the truck maintenance area and the former transformer location. These areas had low or non-detectable PCB concentrations. It is concluded, therefore, that the oil and grease values are likely related to non-PCB oil spillage in these areas. The stained soils would be considered a solid non-hazardous waste under current NYSDEC regulation, provided they are not ignitable. They could be disposed at a NYSDEC-permitted sanitary landfill provided they are accepted by the landfill. There was sufficient staining in this area that, in H&A's opinion, free oil product may be present in the truck maintenance area's subsurface and on groundwater. This initial phase of the investigation was not intended to address this issue.

Total lead and total cadmium concentrations were detected in soils. The high concentrations of total lead and cadmium associated with the fill soils may be attributable to several factors including:



- o coal-type cinders found in several samples recovered from test pits.
- o presence of unrecognizable (even under low magnification) particles of dust containing lead and cadmium compounds from individual emissions and automobiles in the area, or mixed with fill soils or sediment.

Toxicity Characteristic Leaching Procedure (TCLP) analyses of the samples collected showed the majority of samples to be non-hazardous for these compounds by the TCLP characteristic. Selected samples from an approximately 250 x 150+ ft. area in the fill northeast of Plant 2 had TCLP concentrations higher than the USEPA threshold of 5 ppm, and would therefore be considered as characteristically hazardous. Samples from Outfall 001 and the baghouse areas also had TCLP lead results which exceeded 5 ppm. A review of the total lead concentrations and TCLP results indicate that it is the chemical form (type of speciation) of lead in the samples that is controlling lead leachability, and not the total concentration.

Results of PCB analyses showed the majority of samples to have PCB concentrations less than the 25 ppm soil clean-up threshold for industrial areas established by USEPA. One location from the fill area had a PCB concentration above the 25 ppm threshold. This sample location also had elevated lead TCLP results.

Historical information on plant operations indicated baghouse dust from the lead smelter may have been placed with other fill in the fill area. Comparison of the elevated lead TCLP/PCB samples to other site samples showed no marked visible differences, even under low magnification. Further, during test pit explorations and sampling, no readily-recognizable layers, seams or accumulation of smelter baghouse dust were observed. Therefore, no waste, readily classified as K069 (baghouse dust from secondary smelter activities), was visibly apparent in the explorations conducted. The selected samples from the fill area, baghouse area and Outfall 001 do however indicate that some of the areas explored contain TCLP characteristics and PCB hazardous material. Review of lead chemical properties indicate that industrially produced lead tends to have considerably higher solubility than naturally occurring lead, or lead that has been reciprocated to a more stable (carbonate, hydroxide or other) form. Therefore, it is likely that the areas of high TCLP lead also contain industrially derived lead, still in relatively soluble form. Lastly, review of aerial photos,



conducted after test pits had been completed to get more information on the nature of the fill indicated that additional fill may extend beneath the currently paved area north of Plant 2.

In order to evaluate the TCLP lead and PCB occurrences on the Plant 2 property it will be necessary to determine the chemical form of lead that is controlling leachability and the areal extent of such material. An investigation of the areal extent of the material would be necessary to determine the extent of TCLP lead and PCB materials. Further, it is currently unknown if the lead is sufficiently leachable to be migrating into and affecting site groundwater. Therefore, groundwater sampling and analyses would be necessary.

To evaluate these matters, the following recommendations are made and apply to the Plant 2 fill area and the baghouse/dross area, except where indicated otherwise:

- o The program of grid sampling in the fill should be extended south to the currently paved area up to the Plant 2 building. Test borings would be required rather than test pits to limit pavement disturbance.
- o Samples of fill and/or soil would be selected as previously, based on a random number generation for sample selection from the grid pattern. A limited number of additional samples would be selected from already explored areas to allow comparison of sample matrix. Commercial lab analyses could likely be limited to lead (total and TCLP) analysis and PCB analysis. It will also be necessary to review chemical content and form of lead in the baghouse dust with Roth Bros. so as to allow development of a procedure to distinguish industrially-derived lead from stable natural or reciprocated lead.
- o Three to four of the borings should be converted to groundwater monitoring wells to evaluate possible effects on site groundwater in each of the two areas (fill area and baghouse/dross area). Sample analyses should concentrate on lead (total and soluble), related naturally occurring metals, and PCBs.
- o Two to three borings should be placed in the maintenance shop/underground gas tank area to further evaluate subsurface distribution of the oil-stained soils. If staining progresses to depths greater than 8 to 10± ft. then selected borings should be converted to groundwater monitoring wells to evaluate free product presence and thickness. Lab analyses of samples would be limited to petroleum hydrocarbons and its volatile constituents.



The basis of our conclusions and recommendations, and a more detailed description of the investigation performed is contained in the text of this report.



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I. INTRODUCTION

H&A of New York (H&A) has performed an environmental investigation on the Roth Bros. Plant 2 property in East Syracuse, New York, so as to assist Nixon, Hargrave, Devans & Doyle (NHDD) and Roth Bros. Smelting Corporation in identifying and evaluating areas of oil and hazardous material occurrence on the property.

Roth Bros. Smelting Corporation (Roth Bros.) operates two plants (Plant 1 and Plant 2) which are adjacent to one another. This investigation addresses operations conducted on Plant 2 property. Based on H&A's review of site operations and information provided in the RFP, it was determined that a limited program of subsurface explorations and environmental sampling was necessary to screen several site areas for potential hazardous materials that may be associated with plant operations.

Our investigation consisted of a site walkover; review of readily-available information concerning surface topography and water conditions and subsurface soil, bedrock and groundwater conditions; review of readily-available aerial photography for the site and the New York State Department of Environmental Conservation (NYSDEC) Registry of Inactive Hazardous Waste Sites; a limited subsurface investigation consisting of test pit explorations and limited sampling and laboratory analysis of soil and stream sediments.



II. SITE LOCATION AND CURRENT CONDITIONS

2-01. SITE LOCATION

The site is located at 6223 Thompson Road in East Syracuse, New York (See Project Locus, Figure 1). Roth Bros. Plant 2 is bounded by industrial property on the north; a construction equipment rental company, Oberdorfer Foundries, Inc. and Plant 1 of Roth Bros. on the east; railroad tracks on the south; and an industrial park on the west.

Plant 2 property is generally rectangular in shape. Roth Bros. also own a strip of land associated with a right-of-way off Thompson Road. This section of the property is located at the northeast edge of Plant 2, and is bounded by a construction equipment rental company to the north, Oberdorfer Foundries to the south and an access road to the east.

2-02. SITE OPERATIONS

The Roth Bros. Smelting Corp. was established in 1927. Their operations began at the Thompson Road site in the early 1950's (1,2*). Plant 2 was added in the mid-1950's. Currently, Roth Bros. occupies a 32-acre property and Plants 1 and 2 occupy over 200,000 sq. ft. of building space. The facility manufactures aluminum and lead ingots, billets and solder.

Roth Bros. reclaims non-ferrous metals and alloys through secondary smelting and refining of purchased scrap, drosses and production by-products (generally from drosses reclaimed in on-site solder operations) (3). Plant 1 is primarily used for smelting operations for aluminum. Historically, zinc alloying operations took place in Plant 1, however Roth Bros. is not currently involved with zinc alloying. Plant 2 is primarily used for the lead smelting operations.

Scrap pieces of metals are processed such that materials are separated from the valuable metal components through a series of physical and chemical reactions using refractory-lined furnaces. The end products are lead and aluminum with controlled amounts of impurities.

*Number refer to "References" listed at the end of this report.

2-03. CURRENT CONDITIONS

A review of current site conditions was performed with Roth Bros. and NHDD personnel. A site walkover was conducted on 20 August 1990 by H&A of New York.

Observations of site activities at the Plant 2 property documented from this review and walkover are shown on Figure 2 (Site Plan) and described below:

- o Plant 2 buildings are located on the southern half of the Plant 2 property. The majority of the ground surface in the vicinity of the Plant 2 buildings is paved. Oily staining was observed at the ground surface in the vicinity of the maintenance area on the east side of Plant 2.
- o There is an oil/water separator located near the southwest end of Plant 2. The separator collects runoff and drainage from selected Plant 2 areas, settles solids and separates oils before conveyance to a SPDES outfall (designated 001) located along the western Plant 2 property boundary.
- o The northern half of the property is unpaved and part of it has been used as a fill area; the remainder is wooded. Figure 2 shows the approximate boundary where the fill has been placed. The fill is generally graded, however, several piles of ungraded fill were observed in the northwest end of the fill area and appeared to contain primarily construction and demolition debris (sand, gravel, concrete, blacktop).

Work, storage, parking and other designated Plant 2 function areas are shown on Figure 2.

III. SITE HISTORY AND PREVIOUS USAGE

3-01. HISTORICAL SITE USAGE

H&A of New York reviewed aerial photographs covering the site and vicinity. Photographic documentation is available through the U.S. Agricultural Stabilization and Conservation Service (4), U.S. Soil Conservation Service (5), the Onondaga County Department of Planning (6) and the Onondaga County Department of Transportation (7). In addition, Roth Bros. maintains limited photographic record of the site (2). Observations made regarding site development are described below.

1952: Plant 1 is present, although it is smaller than at the present. The eastern portion of Plant 1 appears to be brushy and wooded. The area where Plant 2 is presently located appeared to be an undeveloped parcel (field) (2).

1957: Plant 1 is expanded in size. Some surface debris is noted along the southern boundary of Plant 1 (2). Plant 2 has been built. The ground surface around the plant is unpaved at the time of the photo (2).

1959: Observations of Plant 2 operations in 1959 indicate the plant buildings were not as extensive as they are at the present. Parking appears to be generally along the southern end of the property. Two dark areas appear just south of buildings and may represent, low wet areas (7).

A drainage ditch crosses the property in an east-west direction near the center of the Plant 2 parcel. It appears to connect with a ditch on the east edge of the Plant 2 property.

The northern half of the Plant 2 property is undeveloped and appears to be a field. The northern-most section is lightly wooded and brushy.

1966: As in the 1959 photos, operations at Plant 2 are limited to the southern half of the site. A dark (possibly wet) area is again noted northeast of the Plant 2 building. The area from the Plant 2 building extending several hundred feet north is occupied by plant yard, apparently used for storage and handling of plant materials. Property north of the plant yard is undeveloped and appears to have grass and shrub cover. The drainage ditch is observed to cross the site in an east/west direction.



Off-site, to the west and north of Plant 2, two areas appear disturbed, possibly from construction activities for the neighboring industrial park.

1978: Plant 2 operations appear to have expanded in a northerly direction when compared to the 1966 photo. The ground surface appears to be disturbed from the buildings to the ditch which crosses the site in an east-west direction. A portion of the disturbance appears to be associated with fill activities. The northern third of the Plant 2 property appears brushy/wooded and undeveloped.

A small building, observed east of the Plant 2 main building, is likely the current trailer repair shed/fabricating shop.

The parking area south of Plant 2 buildings appears to be approximately two times as large as it was in the 1966 photograph.

1981: Plant 2 operations appear similar to those observed in the 1978 photo.

1985: Plant 2 operations appear similar to those observed in the 1981 and 1978 photos.

3-02. PREVIOUS ENVIRONMENTAL INVESTIGATION

A limited amount of data was made available for H&A's use in evaluating the Plant 2 site. Six locations were sampled on Plant 2 property as follows:

- o Aluminum Storage Area: Two sample locations (J8265, J8266) were sampled in the aluminum scrap storage area at the northwest corner of the Plant 2 main building. Analyses were conducted for semi-volatiles, total metals and TCLP metals.

Semi-volatiles detected include:

- Benzo(a)Anthracene at 400 and 520 ppm (estimated concentration).
- Bis(2-Ethylhexyl Phthalate) at 12,000 and 25,000 ppm.
- Benzo(a)Pyrene at 740 ppm (estimated concentration in one sample).

The semi-volatiles listed above are products of combustion of fuels. Benzo(a) Pyrene is also a potential roadbed and asphalt leachate.

Total metals analyzed had detectable concentrations of lead, mercury and cadmium. However, metals analyzed by TCLP were not detected above EPA regulatory levels in most samples and therefore would not be considered hazardous by this characterization. Some samples did not contain lead above TCLP limits. Results are summarized below.

- o Open Field to North: Two locations were sampled (J8267, J8268) north of Plant 2 buildings in an open area. Samples were analyzed for total metals and TCLP metals. Metals analyzed by TCLP were not detected above EPA regulatory action levels; therefore these soils are not considered hazardous by this characteristic.
- o Drainage Ditch West: Two samples (J8269, J8270) collected from the drainage ditch along the west side of Plant 2 near Outfall 001 were analyzed for metals (total and TCLP), oil and grease, and PCBs.

Of the metals detected, lead was detected at 7.2 ppm by TCLP, above the USEPA regulatory level of 5.0 ppm.

Oil and grease was not detected above the laboratory detection limits in a water sample collected at the outfall.

PCBs (polychlorinated byphenols) detected include Aroclor 1016/1242 (6.9 ppm) and Aroclor 1254 (1.6 ppm).

- o Lead Dross Storage Area: Metals (total and TCLP) were analyzed in a soil sample (J8271) collected outside the lead dross storage shed on the west side of Plant 2. Lead by TCLP was detected at 12 ppm, above the TCLP regulatory level of 5 ppm.
- o Drainage Ditch East: Three samples (J8272, J8273, J8274) from the drainage ditch near outfall 002 on the east side of Plant 2 were analyzed for semi-volatiles, metals (total and TCLP), PCBs and oil and grease.

The semi-volatiles detected included benzo(a)anthracene (17,000 ppm estimated concentration) and bis 2-Ethylhexyl phthalate.

Metals were not above USEPA regulatory levels when analyzed by TCLP for metals.

Oil and grease was detected at 100,000 ppm. PCBs (Aroclor 1016/1242) were detected at 4.0 ppm.

3-03. POTENTIAL SOURCES OF OIL AND HAZARDOUS MATERIALS

Potential on-site sources of oil and hazardous materials are identified and described below.

Fill Area: On the northern portion of Plant 2, an extensive area (approximately 7 acres) of fill is present north of the paved area. It has been reported that baghouse dusts generated from on-site smelting operations were disposed with fill from 1976 to 1979. Other materials reportedly used for fill in this vicinity include construction and demolition debris associated with on-site activities (i.e. concrete, blacktop). It was also reported that materials associated with expansion of the adjacent industrial park were brought on-site for use as fill (9).

Lead Smelt Baghouses: Lead dusts generated from Plant 2 operations are collected in three baghouses located along the southwest property line (Figure 2). The waste is boxed at the baghouses and then stored as a hazardous waste. Roth Bros. maintains a Part 373 Permit to store hazardous materials. The waste was reportedly exported to England, where it was recycled for its tin content (1).

Truck Maintenance Areas: The maintenance shop is located at the southeast end of the main Plant 2 building (Figure 2). This area is used primarily for the maintenance of forklifts and other plant operating equipment. Roth Bros. operates a trailer maintenance shop and a fabricating shop along the east edge of Plant 2, adjacent to the railroad tracks.

Underground Tanks: Three underground storage tanks are reportedly located in the maintenance facility areas outside Plant 2 (Figure 2). They are as follows:

- o 2,000 gallon - unleaded gasoline
- o 1,000 gallon - regular gasoline
- o 2,000 gallon - diesel fuel

These tanks are registered with New York State Department of Environmental Conservation (NYSDEC) and leak tested annually (12).

Substation: Roth Bros. recently installed their own power substation at the southeast end of Plant 2. The substation is located immediately north of an older substation, which was

dismantled in 1990. The new substation reportedly does not have PCB-containing oils; however, there may have been PCB-containing oils associated with the former substation. The switch gear at the former substation was reported to have leaked in the past (1). H&A observed stained concrete on the old transformer pad.

Plant 2 - Southwest Corner: An area in the southwest corner of Plant 2 was reported to have had oil seeps close to the ground surface in the past (9). Apparently, the seeps were associated with water entering the south bank of a former open ditch. Oil seeps have not been observed at the ground surface since the ditch was converted to an underground drainage pipe (9).

Outfall 001: Outfall 001 is located along the west edge of the Plant 2 property (see Figure 2) and is part of the SPDES outfall system. Outfall 001 collects discharges primarily from the western and southern portion of Plant 2. There is an open ditch north of the outfall, as shown on Figure 2. The ditch appears to pond up at the northwest end of the property; a clear outlet from the ponded area is currently not discernible. As shown in the aerial photographs, the east-west ditch covered by the fill area may have historically been the outlet for the 001 outfall drainage.

Outfall 002: SPDES Outfall 002 is located along the east side of Plant 2, near the split for the railroad spur that leads to Plant 2. Outfall 002 receives runoff from the majority of Plant 2, including the parking area at the south end of the site. It also receives discharges collected from the western portion of Plant 1.

Off-site, potential sources of oil and hazardous materials were observed as follows:

- o Oberdorfer Foundry is located on Thompson Road adjacent to Plant 2 on the east. Oberdorfer manufactures aluminum castings and centrifugal pumps. The foundry is listed on the NYSDEC Registry of Inactive Hazardous Waste Sites. Reportedly, the foundry disposed of spent core sand, refractory linings, air control equipment and air control equipment dust (8). These sands are located east of Plant 2, approximately 150 to 200 ft. from the Plant 2 property line, across the railroad tracks. The DEC's investigation conducted in 1979 indicated there were no phenols in excess of applicable water quality standards for surface water samples obtained. Further NYSDEC investigations regarding groundwater or other sampling were not evaluated for the current investigation (8).

- o West and north of Plant 2 property, there is an industrial park with businesses including a pattern maker, Ashland Chemicals, Georgia Pacific, Metal Specialty Corporation and Union Carbide-Linde Division (gas products), as well as other businesses.

IV. SUBSURFACE INVESTIGATIONS

Based on H&A's review of past site usage and on information provided by Roth Bros. and NHDD, a limited site exploration and sampling program was conducted to further evaluate the potential presence of oil and hazardous materials at the site locations described above. Site geologic conditions, investigations and environmental sampling are discussed in more detail below.

4-01. REGIONAL GEOLOGIC CONDITIONS

Bedrock which reportedly underlies the site is mapped as the Vernon Formation, composed of shale and dolostone of the Upper Silurian (10).

Unconsolidated deposits which are mapped in the site vicinity include lacustrine silt and clay. These lacustrine deposits are typically composed of laminated clay and silt size particles deposited in proglacial lakes (11).

Surface water drains from the site toward the northeast to the South Branch of Ley Creek. The South Branch discharges into Ley Creek, approximately 6500 ft. northwest of the site. Groundwater was encountered at relatively shallow depths below ground surface in site overburden in the test pits performed. Based on these observations and prevailing surface water flow directions, it is likely that shallow groundwater also flows northeasterly. Groundwater monitoring wells would be required to confirm this.

4-02. SITE SUBSURFACE CONDITIONS

Subsurface explorations for the purpose of subsurface characterization of the site and obtaining samples for laboratory analyses consisted of test pits, surface soil sampling and stream sediment sampling. Test pit excavation was performed by Parratt Wolff, Inc. of Syracuse, New York on 22, 23 and 24 August 1990 under the observation of H&A of New York personnel. The equipment used for excavation was a John Deere 410-D rubber-tired backhoe. All test pits were backfilled with the excavated materials and compacted upon completion of logging of the soil strata and soil sampling. Exploration locations are shown on Figure 3, a summary of the test pit data is presented in Table I, and a summary of surface and stream sediment sampling is presented in Table II. Test pit logs are contained in Appendix A.

Brief discussions of the subsurface explorations conducted, conditions encountered, and sampling and analyses for each area are presented below.

4.2.1 Fill Area

A total of 18 test pits, designated TP01 through TP18, were excavated in the fill area at the north end of Plant 2. A grid pattern of excavation locations was established in accordance with USEPA guidance for screening of unknown fill areas. The test pits were arranged in an approximate 100 ft. x 100 ft. grid pattern in order to maximize coverage of the fill area. They were excavated to depths ranging from 5.5 to 10.0 ft.

Fill was encountered to depths ranging from 2.0 to 6.0 ft. The fill encountered typically consisted of granular materials (gravel, sand and some silt) with or without brick, wood, concrete, asphalt, cinders, and scrap metal in amounts up to approximately 20%. Ash, which typically contains metals, was encountered in TP01 in the southeastern corner of the fill area.

The natural materials underlying the fill consisted of lacustrine silt and sand. A 0.2 ft. to 1.0 ft. thick layer of dark brown to black organic silt was encountered in 4 test pits at the upper portion of the lacustrine deposits. Glacial till was encountered below the lacustrine deposit, at a depth of 5.0 ft. in TP05, located at the southwestern portion of the fill area.

4.2.2 Truck Maintenance Area

A total of 3 test pits, designated TP22 through TP24, were excavated in the truck maintenance area. These test pits were advanced to a depth ranging from 3.5 ft. to 4.0 ft. Fill was encountered to a depth of 1.0 ft. to 1.5 ft. and consisted of granular sand and gravel with cinders and asphalt.

Lacustrine sand and silt was encountered below the fill. A 1.0 ft. layer of gravelly sand, interpreted as fluvial in origin, was observed to be overlying the lacustrine deposit in TP23.

4.2.3 SPDES Outfalls

A total of 10 sediment samples, 5 each from SPDES Outfall drainage ditches 001 and 002, were collected and submitted to General Testing Corporation for analysis. Outfall 001 drainage ditch discharges into a ponded area approximately 500 ft. north of the outfall. Aerial photos indicate that a continuation of this drainage ditch, trending east across the site from where it is currently ponded, previously discharged into the Outfall 002 drainage ditch, as shown on Figure 2. This connecting ditch has since been filled.



Sediment collected from the Outfall 001 drainage ditch was mainly composed of organic silt. Cinder and brick particles were observed in the ponded area. An oily residue was noted in the sediment samples and oily sheen formed on the water when sediment was disturbed.

The Outfall 002 drainage ditch discharges into South Branch of Ley Creek and trends north along the property boundary. Samples were collected along this drainage ditch along the Roth Bros. property line. Sediments consisted of dark brown oil-stained organic silt. A petroleum-like odor was noted during the sampling event and an oily sheen formed on the water when the sediment was disturbed.

4.2.4 Lead Smelt Baghouses

A total of 3 soil samples (LBS-1, LBS-2, LBS-3) was collected west of the fenceline near the lead smelt baghouses along the west property boundary. A small pit, approximately 1 ft. in diameter, was then excavated by hand using a shovel to a depth of 1.5 ft. The bottom 1.0 ft. of the excavation was sampled for submission to the laboratory. Soil encountered in this area was composed of granular fill, ranging from gravelly silt to sandy gravel (Table II).

4.2.5 Former Substation

One sample (TSS-1) was collected at the site of the former substation. This sample was obtained from the gravel fill immediately adjacent to the concrete pad that served as the old transformer platform. The sample interval was from 0.5 to 1.0 ft. below ground surface.

4.2.6 Plant 2-Southwest Corner

One test pit, designated TP25, was completed in the southwestern corner of the site, where oil seeps had been reported along a former drainage ditch. This test pit was excavated to a depth of 4.0 ft. Granular fill (gravelly sand) was encountered to a depth of 2.0 ft. The soil sample was collected from 1.5 to 2.0 ft. Lacustrine silt and sand was encountered below the fill at 2.0 ft. Visible evidence of oil-staining was not apparent in the exposed soil layers at TP25.

4.2.7 Background/Native Soil

One sample was collected to the south of Plant 2, and three samples were collected in the wooded area north of the fill area. The samples were collected from hand excavated pits between 0.5 and 1.0 ft. below ground surface and consisted of lacustrine silt and sand. They represent samples of apparently undisturbed lacustrine deposits.

one
sample found
in wooded
area

4.2.8 Organic Vapor Screening

Soil samples and air space above or within excavations were routinely screened for volatile organic compounds using the HNU photoionization detector model PI101, equipped with an 11.7 eV ultraviolet lamp. Levels in excess of background levels were not detected in the screenings.

4-03. GROUNDWATER CONDITIONS

Surface water flow in the vicinity of the site is to the north toward south branch of Ley Creek. The unconsolidated lacustrine deposits appear to form a shallow unconfined aquifer beneath the site. Groundwater, when encountered during exploration, was generally within a few feet of the ground surface.

In the fill area, groundwater was encountered in most test pits. When possible, test pits were left open for several hours before a water level measurement was obtained. In the northernmost test pits, depth to groundwater was between 6.5 and 7.0 ft., whereas it was approximately 5.5 ft. in test pits located in the middle/southern portion of the fill area. In test pit TP01, in the southeast corner of the fill area, the water was dark colored and had an oily sheen. Groundwater in the rest of the test pits in the fill area was unremarkable.

Groundwater was encountered in one of the test pits in the Truck Maintenance Area. Depth to groundwater was 3.0 ft. in the southernmost test pit of this area (TP22). A thin layer of black oil was noted on the surface of the water.

No groundwater was encountered in the test pit in the southwest corner of Plant 2 or any of the surface sampling excavations.

V. CHEMICAL ANALYSES

5-01. SAMPLE LOCATIONS, COLLECTION AND HANDLING

Sample locations are shown on Figure 3. A summary of the test pit data, including sample numbers and depths, is presented in Tables I and II.

In the fill area, 12 test pits were randomly preselected for sample submission to the analytical laboratory using random number generation to identify test pits which would be sampled for lab analysis. Random selection by this method is recommended USEPA procedure for screening of uncontrolled fill areas as it prevents bias in the sample selection process. Samples were obtained from the backhoe bucket after excavating from the desired sampling depth.

In the truck maintenance area and southwest corner of Plant 2, soil samples were obtained from the backhoe bucket after excavating from the desired sampling depth. The bottom 0.5 ft. of the fill layer was selected for sampling.

Stream sediment samples were collected from the furthest downstream location toward the upstream locations. Samples were collected either directly into the sample jar by holding the jar so that it faces upstream or by using a shovel to obtain sediment from deeper areas of the stream.

Samples from the lead smelt baghouse area, the former substation, the Plant 2 background and the native soil locations were collected by hand using a shovel. The shovel was decontaminated between each sample location. Care was taken to collect the sample from materials which did not come in contact with the shovel.

Following sample collection, samples were labelled and chilled until delivery to General Testing Corporation of Rochester, New York for subsequent analyses.

5-02. QA/QC PROCEDURES

A quality assurance/quality control (QA/QC) program was established for field collection and laboratory analyses of samples obtained at the site.

One field duplicate sample was collected for each of the four areas and soil/fill types sampled. Field duplicate sample analytical results are presented in Table III with the site analytical results. Sample duplicates are as follows:

- o TP12 - Fill Area
- o TP24 - Truck Maintenance Area
- o SDS-1-1B - Outfall 001
- o LBS-1B - Lead Smelt Baghouses

Field cleaning blanks (rinsate blanks) were collected using the same handling techniques as other samples. Deionized water, supplied by General Testing Corp., was poured over the sampling implement following decontamination. Field blanks are used to assess the potential introduction of contamination during sample collection and analyses.

Chain-of-custody forms were completed following sample collection, and the forms accompanied the samples to the laboratory. The chain-of-custody forms may be found in Appendix B along with laboratory reports. Following collection, and during shipment, the samples were kept chilled in coolers.

5-03. LABORATORY CHEMICAL ANALYSES RESULTS

Soil and sediment samples, as well as rinsate blanks, were submitted to General Testing Corporation for laboratory analyses. Each sample was analyzed for the following parameters:

- o Total Metals (related to Plant 2 operations) - lead, chromium, cadmium
- o Toxicity Characteristic Leaching Procedure (TCLP) Metals - lead, chromium, cadmium
- o Polychlorinated biphenyls (PCBs)
- o Grease and Oil

The results of the laboratory analyses are presented in Appendix A and are summarized on Table III. Concentration criteria were selected to allow comparison of detected lead, chromium, cadmium and PCBs. Such criteria are identified as follows:

- o TCLP Metals - The USEPA has established concentrations which may be present in leachate from the TCLP analyses as a basis for determining characteristically hazardous material from non-hazardous. The established concentrations are as follows:

Lead - 5.0 ppm or greater
Chromium - 5.0 ppm or greater
Cadmium - 1.0 ppm or greater

- o Total Metals - The USEPA has not currently established a total lead standard for soil, however, an action level of 500 ppm has been reported at cleanup sites under NYSDEC review (14). A 1000 ppm action level has been reported at

*1000 ppm
Lead
Chromium
Cadmium*



superfund sites, in EPA's biogenetic model, in Center for Disease Control policy and by the State of Minnesota (temporary standard) (15). To be conservative and in line with potential NYSDEC requirements, the 500 ppm concentration was used as a comparison criteria for total lead.

For total chromium, the USEPA Health-based criteria of 400 ppm for systemic toxicants was used for comparison (13).

There is currently no recommended USEPA criteria for total cadmium.

- o PCBs - The USEPA has established a range of total PCB concentrations, based primarily on land use and potential for human exposure as a basis for comparing PCB data (16). Concentrations less than 10 ppm total PCB are generally considered acceptable at most locations. A range between 10 and 25 ppm is the comparison criteria where residential/commercial land use prevails and 25 ppm (or lower) is generally acceptable in the industrial areas. As the site is industrial and surrounded by industrial businesses, the 25 ppm comparison criteria was selected.

5.3.1 Fill Area

Twelve of the eighteen test pits from the fill area were randomly selected for subsequent laboratory analyses. Of these twelve, eight test pits (TP03, TP05, TP06, TP07, TP08, TP09, TP10, and TP11) had lead (total) concentrations below 500 ppm. TP01, TP02, TP12 and TP18 had concentrations ranging from 2980 ppm to 25,100 ppm total lead, above the comparison criteria of 500 ppm. The highest concentrations were in TP01 (10,900 ppm), TP02 (25,100 ppm) and TP12 (10,400 to 14,300 ppm).

Chromium (total) concentrations for test pits in the fill area ranged from 13.2 ppm to 282.0 ppm. They were below the USEPA health-based criteria of 400 ppm for systemic toxicants for soils (13).

Cadmium (total) was detected at concentrations ranging from 1.48 ppm to 53.8 ppm in the test pits samples analyzed. There is no health-based criteria for cadmium in soils.

TCLP analyses of test pit samples resulted in detection of lead levels, in excess of the USEPA threshold of 5 ppm in two samples, TP06 and TP07. Cadmium and chromium TCLP results were all less than the applicable USEPA thresholds.

PCB analysis resulted in detection of PCBs at nine locations, one of which exceeded the USEPA cleanup criteria of 25 ppm. The detection was at location TP07, which also has elevated TCLP lead (Table III and Figure 3).

5.3.2 Truck Maintenance Area

Three soil samples plus one duplicate were collected from the test pits behind the truck maintenance area and designated TP-22 through TP-24. Total lead concentrations from these samples ranged from 1,160 ppm to 8460 ppm, above the 500 ppm criteria. Total chromium concentrations ranged from 84 to 108 ppm below the EPA health-based criteria of 400 ppm. Total cadmium concentrations detected ranged from 14.6 ppm to 63.2 ppm.

TCLP analyses for metals for samples collected from the maintenance area did not exceed USEPA criteria for TCLP hazardous characteristic.

Oil and grease analyses ranged from 3075 to 22,600 ppm in the maintenance area. This represents the highest concentration range of the areas sampled, which is consistent with the oily staining observed in these area soils.

5.3.3 SPDES Outfall 001

Five sediment samples (SDS-1-1 through SDS-1-5) were collected from the drainage ditch at 100 ft. intervals along the western property boundary. SDS-1-1 was the furthest downstream sample collected; SDS-1-5 was the sample nearest the SPDES Outfall 001. Total lead concentrations ranged from 214 ppm in SDS-1-5 to 5240 ppm in SDS-1-3. Three locations had lead concentrations greater than 500 ppm.

The total chromium detected ranged from 19.7 to 157 ppm. Concentrations detected fall below the EPA health-based criteria for chromium in soils.

The total cadmium detected ranged in concentration from 5.19 to 68.6 ppm.

TCLP analyses of Outfall 001 samples resulted in detection of lead TCLP results above USEPA criteria at two locations. Sample SDS-1-1A and SDS-1-1B represent duplicates; split samples obtained from the same location. TCLP lead is detected at 36.2 ppm in split 1B

and 17.7 ppm in split 1A. This sample location is located furthest from the outfall source. The second sample with high TCLP lead was SDS-1-5, located near the outfall source.

Grease and oil results for Outfall 001 ranged from 641 to 5750 ppm.

PCB analytical results ranged from non-detect to 2.350 ppm, below the USEPA 25 ppm comparison criteria.

5.3.4 SPDES Outfall 002

Five sediment samples were collected from the drainage ditch along the Plant 2 eastern property boundary. SDS-2-1 through SDS-2-5 were collected at 150 ft. intervals, in order, from the furthest downstream location to the upstream location where Outfall 002 is located. Total lead concentrations detected ranged from 384 ppm to 2060 ppm.

Total chromium concentrations detected ranged from 11.4 ppm to 22.6 ppm.

Total cadmium was detected at concentrations ranging from 7.9 ppm to 15.5 ppm.

TCLP analyses of these samples did not detect any metals concentrations in the TCLP leachate above the USEPA threshold values.

Oil and grease analyses detected concentrations ranging from 641 to 5750 ppm.

PCB analyses resulted in concentrations ranging from non-detectable to 1.330 ppm.

5.3.5 Lead Baghouse Area

Three surface soil samples plus one duplicate sample (LBS-1A and 1B, LBS-2 and LBS-3) were collected along the west side of the baghouses at the western property boundary. Total lead concentrations range from 287 ppm to 4440 ppm. Lead concentrations in the duplicate samples, 1A and 1B, were similar at 4300 and 4400 ppm, respectively, and exceed the comparison criteria.

Total chromium in samples collected from the baghouse area ranged from 9.63 ppm to 18.9 ppm.

Concentrations for total cadmium detected ranged from 5.7 ppm to 2,570 ppm. The sample LBS-1A had the highest concentration (2,570 ppm), and the duplicate LBS-1B had a concentration of 36.5 ppm.

TCLP analyses on the baghouse area samples resulted in one detected concentration above USEPA thresholds. Sample LBS-3 yielded a lead TCLP result of 5.070 ppm which is just above the 5 ppm criteria. This sample was obtained from a location approximately 75 ft. from the lead dross shed.

Grease and oil results ranged from 510 to 2230 ppm in baghouse samples.

PCB results for the baghouse samples were below the 25 ppm comparison criteria.

5.3.6 Former Substation

One sample set TSS-1 was collected from the former substation. No TCLP values exceeded USEPA thresholds. The grease and oil concentration was elevated (as compared to the other site samples) at 28,800 ppm; however, PCB concentrations in the sample were only 0.588 ppm, two orders of magnitude below the USEPA threshold.

5.3.7 Plant 2-Southwest Corner

One soil sample (TP-25) was collected from the suspected oil seep area at the southwest corner of Plant 2. Total lead and total chromium concentrations of 72.7 ppm and 13.4 ppm, respectively, were reported. Total cadmium was detected at 1.36 ppm.

TCLP and PCB analyses resulted in detected levels below applicable USEPA criteria. Oil and grease values were low (166 ppm) compared to other areas sampled at Plant 2.

5.3.8 Background/Native Soil

One background sample (SGB-1) was collected from the south end of Plant 2. Three native soil samples (NGB-1, NGB-2 and NGB-3) were collected from the north end of Plant 2 at the edge of the wooded area. TCLP and PCB values were non-detect. Oil and grease concentrations were 270 ppm.

5-04. DISCUSSION

Metals

Laboratory analytical results from samples collected on Plant 2 property generally indicate the presence of total lead at elevated concentrations.

The total metal concentrations for cadmium, chromium and lead have been plotted for the fill area, Outfall 001 and Outfall 002 and are shown on Figures 4, 5 and 6. As can be seen from the graphs, in general there appears to be a correlation between the relative concentration of metals; that is, the concentrations of cadmium and chromium tend to rise and fall as the concentration of lead rises and falls. This is particularly notable in Outfall 002 (Figure 6) and is generally the case for the Plant 2 fill area (Figure 4). However, the correlation does not hold true for all samples as is demonstrated in Outfall 001 (Figure 5). It can be concluded from this that the sources of elevated metals in the fill area and Outfall 002 are likely similar or the same.

In order for a sample to fail TCLP analysis the metal of concern must be present in sufficient concentration and in the appropriate chemical form to allow dissolution and leaching by the acidic solution used for the TCLP procedure. Although elevated concentrations were present in most samples, only selected samples (with relatively low concentrations) were leachable by the TCLP procedure.

The concentrations of lead by the TCLP method have been plotted to see if a correlation exists between total lead concentrations and TCLP lead concentrations. The TCLP plots may be seen on Figures 7, 8 and 9 for the fill area and Outfalls 001 and 002, respectively.

In the fill area, high total lead concentrations were generally found in TP01, TP02 and TP12. Concentrations exceeding the TCLP threshold for lead (5.00 ppm) were located in TP06 and TP07. A similar case may be seen for the Outfalls 001 and 002. In summary, there does not appear to be a correlation between the high lead (total) and high TCLP lead values.

It was observed that several of the test pits contained cinders and soil fill associated with concrete and asphalt. Cinders typically contain high concentrations of metals, occasionally up to a percent level. Lead, when contained in cinders is typically in a silicate oxide form which strongly resists re-speciation as would be necessary for TCLP leaching. Based on observations made of test pit soils and fill, it is H&A's opinion that the elevated metals concentrations are associated, at least in part, to the type of fill constituents encountered.

An additional common source of heavy metals in soil and sediment is deposition and runoff of airborne urban industrial and automobile emissions. Lead and cadmium are commonly associated with automobile emissions, and all three metals (lead, cadmium and chromium) result from industrial sources (13). Precipitation events and particularly roadway/parking lot snow melt tend to flush high concentrations of these metals toward parking lot edges and along drainage swales. It is apparent that shallow samples from the outfalls and possibly fill area samples (where associated with asphalt) have metals concentrations that may have been influenced by such processes.

Oil and Grease

For the grease and oil analyses conducted, the background/native soil concentrations ranged from 137 ppm to 1605 ppm. These concentrations were exceeded in:

- o TP18 (5434 ppm) from the fill area;
- o LBS-3 (2230 ppm) from the baghouse area;
- o the maintenance area (3075-22,600 ppm);
- o SDS-1-5 (5750 ppm) from the ditch at Outfall 001;
- o TSS-1 (28,800 ppm) from the former transformer location.

Oil sheens or stains were noted at few locations sampled including the Outfalls (001 and 002), the maintenance area, and the transformer area. These areas tended to have slightly higher average oil and grease values than other areas sampled, corresponding to the observable staining. It should be noted however, that the gravimetric laboratory analysis detects both man-made and naturally occurring oils, greases and fats. Vegetative and animal matter can result in elevated concentrations where a man-made oil or grease source doesn't exist. Based on observations of wood and other vegetative material in some of the areas explored, it is apparent that the oil and grease results obtained indicate a petroleum oil presence only in the selected areas described above where oil staining was evident.

PCB concentrations, where detected, generally did not correspond to higher oil and grease values. In particular, some of the highest oil and grease values corresponded to low or non-detectable PCB concentrations.

PCBs

Detected PCB concentrations exceeded USEPA criteria at one location (TP-07) in the fill area. This sample also had a high TCLP lead value.



VI. CONCLUSIONS AND RECOMMENDATIONS

Based on the scope of work performed for this investigation, the following conclusions and recommendations with respect to potential occurrence of oil and hazardous materials at this site have been made:

Maintenance Area - Oil stained soils were observed in several areas on the ground surface and in test pits. Oil and grease concentrations detected in this area were, on the average, higher than other areas explored. The stained soils did not have PCB concentrations in excess of USEPA criteria therefore they would likely be classified as a non-hazardous solid waste, provided they don't fail an ignitability analysis. This investigation was not intended to evaluate presence of petroleum on groundwater; based on H&A's observations this possibility exists.

It is therefore recommended that two to three shallow borings be placed in this area to evaluate depth of staining. If petroleum appears to exist into water saturated materials the borings should be converted to wells to evaluate product thickness and possible extent. If removal of stained soils is desired by Roth, then disposal at a NYSDEC permitted sanitary landfill should be possible.

Substation Area - Although oil stains were evident in this area and detected oil and grease values were relatively high, the sample obtained from the stained area did not have PCB concentrations in excess of USEPA criteria. No further recommendations are made for this area.

Fill Area - Sampling to date has detected elevated concentrations of lead although it is apparent from TCLP analyses performed that there is no correlation between high total lead levels and leachability. Only leachable lead was detected in an area of the fill approximately 150 x 250 ± ft. in size, located northeast of Plant 2. It is apparent that the lead detected through TCLP analyses is likely related to an industrial source, as industrially derived lead, which has not re-specified to a stable carbonate (or other) form and tends to be more soluble than natural forms or re-specified forms of lead.

It was noted in review of aerial photos that additional fill, which was not explored in this investigation, may be present beneath the pavement north of Plant 2.

Based on the above findings, it is recommended that the grid exploration program be extended south into the current paved area. Sampling should be performed on a similar grid with random sample selection. Sampling should also be repeated in some already-explored areas to allow sample comparison for total and leachable lead. Review of chemical properties at baghouse dust with Roth Bros. personnel will be necessary to develop a method to distinguish industrial/leachable lead in samples from natural or stable re-specified forms.

Leachable (or soluble) lead may be subject to migration to site groundwater. Therefore, to determine if groundwater has been affected, 3 to 4 of the borings in the grid should be converted to groundwater monitoring wells and sampled for lead (total and soluble), related metals, and PCBs. One to two of these wells would be best located in the area currently known to have high TCLP values (near TP-07).

Baghouse/Outfall 001/Dross Area - As with the fill area total lead concentrations were elevated, however this again bore no relationship to TCLP leachability. It is notable that the nearest Outfall 001 sample also contained a high lead TCLP, and that historically this outfall received drainage from a north-south oriented ditch that ran past the baghouse area. It is apparent, therefore, that leachable lead results for this area are likely related to a common or similar source(s).

It is recommended that a grid sampling program be established for this area, similar to the Plant 2 fill area. Intent of the program would be further determination of apparent source area(s) and its (their) extent. Sample selection, analyses and installation of groundwater wells would be performed in a manner similar to the fill area.

Summary - In summary, two occurrences of oil and hazardous materials were identified during this investigation. Oil stained soils in the maintenance area appear to constitute a solid waste. Presence of oil on groundwater is currently unknown but may be evaluated with implementation of the recommendations described above.

Fill and sediment which appears to be characteristically hazardous by TCLP lead criteria and/or the presence of PCBs above 25 ppm is present in two areas of the plant. Additional evaluation is required to better determine the source(s), apparent extent and whether groundwater has been affected. Again, recommendations are provided above to initiate such evaluation.

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REFERENCES

1. H&A of New York personal communication with Mr. Neal Schwartz, General Manager, Roth Bros., 20 August 1990.
2. H&A of New York review of photographs from Roth Bros. Smelting Corp. offices, 23 August 1990.
3. "The Roth Report", Roth Bros. Smelting Corp., Fall 1987.
4. H&A of New York review of aerial photographs for 1978, U.S. Agricultural Stabilization and Conservation Service, Onondaga County, 23 August 1990.
5. H&A of New York review of aerial photographs for 1966, U.S. Soil Conservation Service, Onondaga County, 23 August 1990.
6. H&A of New York review of aerial photographs for 1981 and 1985, Onondaga County Planning Department, 23 August 1990.
7. H&A of New York review of aerial photographs for 1959, Onondaga County Department of Transportation, 23 August 1990.
8. "Inactive Hazardous Waste Disposal Sites in New York State", New York State Department of Environmental Conservation, Volume 7, April 1990.
9. H&A of New York personal communication with Mr. Frank Myer, Plant Engineer, Roth Bros., 21 August 1990.
10. "Geologic Map of New York - Fingerlakes Sheet", NYS Museum and Science Service, 1970.
11. "Surficial Geologic Map of New York - Fingerlakes Sheet", NYS Geological Survey. 1986.
12. H&A of New York telephone conversation with Mr. Neal Schwartz, General Manager, Roth Bros. Smelting Corp., 12 September 1990.
13. "Health and Environmental Assessment", USEPA RCRA Facility Investigation Guidance, Volume I of IV, EPA 530/SW-87-001A, July 1987, Section 8, Interim Final, revised May 1989.
14. H&A of New York telephone conversation with Mr. Robert Hall, Bureau of Eastern Remedial Action, Division of Hazardous Waste Remediation, NYSDEC, 1 March 1991.

REFERENCES
(con't)

15. "The Nature and Extent of Lead Poisoning in Children in the United States: A Report to Congress", Agency for Toxic Substances and Disease Registry, U.S. Dept. of Health and Human Services, July 1988.
16. PCB Spill Cleanup Policy, EPA 40 CFR, Part 761, 1987.

TABLE I
ROTH BROS. SMELTING CORP. - PLANT 2
TEST PIT DATA SUMMARY

LOCATION	TEST PIT NO.	TOTAL DEPTH (FT)	FILL DESCRIPTION	FILL DEPTH (FT)	SAMPLE DEPTH (FT)
FILL AREA	TP01	10.0	Gravel, Sand, Ash, Cinders, Brick and Wood	0.0 - 8.0	4.0 - 5.0
	TP02	8.0	Granular	0.0 - 5.0	4.0 - 5.0
	TP03	5.5	Granular	0.0 - 4.0	3.0 - 4.0
	TP04	6.0	Granular	0.0 - 4.5	—
	TP05	7.0	Granular	0.0 - 3.0	2.0 - 3.0
	TP06	8.0	Granular, with Brick and Wood	0.0 - 3.0	2.0 - 3.0
	TP07	7.0	Granular, with Brick and Wood	0.0 - 4.0	3.0 - 4.0
	TP08	9.0	Granular, with Brick, Concrete and Wood	0.0 - 2.0	1.0 - 2.0
			Granular	2.0 - 3.0	
	TP09	7.0	Granular, with Brick and Wood	0.0 - 4.0	3.0 - 4.0
	TP10	7.5	Granular	0.0 - 5.0	3.0 - 4.0
	TP11	6.0	Gravel, Sand, Cinders, Ash and Wood	0.0 - 2.0	1.0 - 2.0
			Granular	2.0 - 4.5	
	TP12	8.0	Silt, Gravel, Cinders, Wood, Ash and Brick	0.0 - 4.0	3.0 - 4.0 (D)
	TP13	8.0	Granular, with Wood and Concrete	0.0 - 4.0	—
	TP14	7.0	Granular, with Wood, Concrete and Asphalt	0.0 - 4.5	—
	TP15	8.0	Granular	0.0 - 2.0	—
	TP16	8.0	Granular, with Concrete and Asphalt	0.0 - 4.0	—
	TP17	8.0	Granular, with Concrete, Asphalt and Wood	0.0 - 5.0	—
	TP18	7.0	Granular, with Concrete, Cinders and Wood	0.0 - 4.0	3.0 - 4.0
TRUCK MAINTENANCE A	TP22	4.0	Granular, with traces of Oil	0.0 - 1.5	1.0 - 1.5
	TP23	3.5	Granular, with Asphalt and Cinders	0.0 - 1.0	0.5 - 1.0
	TP24	4.0	Granular, with Asphalt and Cinders	0.0 - 1.0	0.5 - 1.0 (D)
PLANT 2 - SOUTHWEST	TP25	4.0	Granular	0.0 - 2.0	1.5 - 2.0

NOTES:

1. Granular Fill consists mainly of sandy GRAVEL, with traces of wood, cinders, brick and scrap metal.
2. — indicates no sample submitted for analysis.
3. (D) indicates sample submitted in duplicate.

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TABLE II
ROTH BROS. SMELTING CORP. - PLANT 2
SUMMARY OF SURFACE AND STREAM SEDIMENT SAMPLING

LOCATION	DATE	SAMPLE NO.	TYPE	DESCRIPTION	SAMPLE DEPTH (FT)
OUTFALL 001	08/28/90	SDS-1-1A	Stream Sediment	Dark brown CINDER and BRICK PARTICLES.	0.5 - 1.0
	08/28/90	SDS-1-1B	Stream Sediment	Duplicate of 1A.	0.5 - 1.0
	08/28/90	SDS-1-2	Stream Sediment	Black organic SILT.	0.5 - 1.0
	08/28/90	SDS-1-3	Stream Sediment	Brown organic sandy SILT.	0.5 - 1.0
	08/28/90	SDS-1-4	Stream Sediment	Dark brown organic SILT.	0.5 - 1.0
	08/28/90	SDS-1-5	Stream Sediment	Dark brown sandy SILT, trace organics.	0.5 - 1.0
OUTFALL 002	08/22/90	SDS-2-1	Stream Sediment	Dark brown organic SILT.	0.0 - 0.5
	08/22/90	SDS-2-2	Stream Sediment	Dark brown organic SILT.	0.0 - 0.5
	08/22/90	SDS-2-3	Stream Sediment	Dark brown organic SILT.	0.0 - 0.5
	08/22/90	SDS-2-4	Stream Sediment	Dark brown organic SILT.	0.0 - 0.5
	08/22/90	SDS-2-5	Stream Sediment	Dark brown organic SILT.	0.0 - 0.5
LEAD SMELT BAGHOUSE	08/23/90	LBS-1A	Soil/Fill	Brown and black SILT (0.0-0.8ft.)	0.5 - 1.5
				Gray-brown sandy GRAVEL (0.8-1.5ft.)	
	08/23/90	LBS-1B	Soil/Fill	Duplicate of 1A.	0.5 - 1.5
	08/23/90	LBS-2	Soil/Fill	Brown gravelly SILT.	0.5 - 1.5
	08/23/90	LBS-3	Soil/Fill	Red-brown gravelly SILT.	0.5 - 1.5
FORMER SUBSTATION	08/28/90	TSS-1	Soil/Fill	Gray-brown GRAVEL, trace sand.	0.5 - 1.0
SOUTH OF PLANT 2	08/28/90	SGB-1	Background Soil	Dark brown gravelly SILT (0.0-0.5ft.)	0.5 - 1.0
				Light brown sandy SILT, little gravel(0.5-1.0ft.)	
NORTH OF FILL AREA	08/28/90	NGB-1	Native Soil	Dark to light brown SILT, trace organics.	0.7 - 1.0
		NGB-2	Native Soil	Dark to light brown SILT, trace organics.	0.5 - 1.0
		NGB-3	Native Soil	Dark to light brown SILT, trace organics.	0.8 - 1.0

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ROCHESTER, NEW YORK

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TABLE III
ROTH BROS. SMELTING CORP.
PLANT 2

SUMMARY OF LABORATORY ANALYTICAL DATA

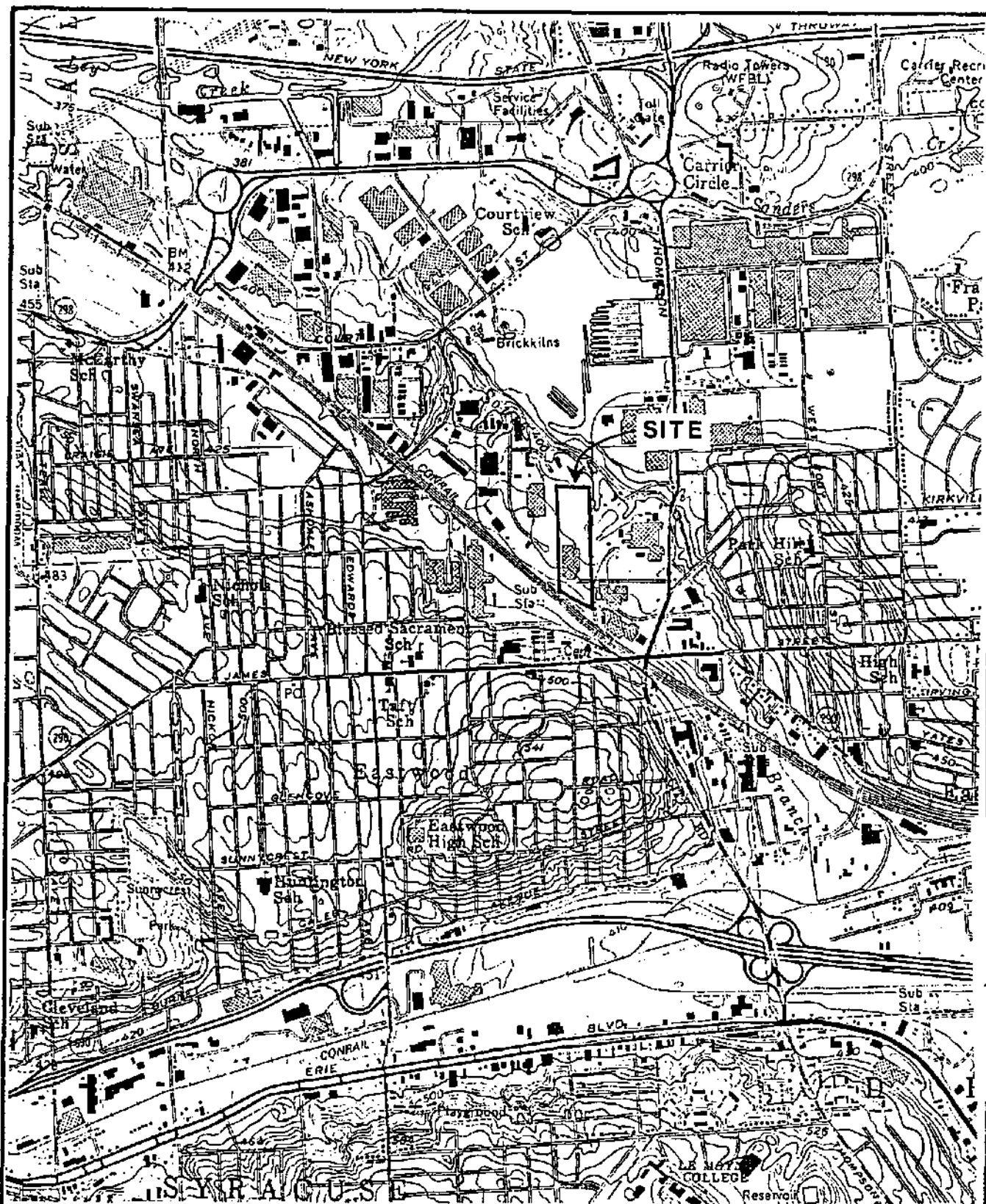
LOCATION	SAMPLE NO.	LEAD TOTAL	LEAD TCLP	CHROMIUM TOTAL	CHROMIUM TCLP	CADMIUM TOTAL	CADMIUM TCLP	GREASE AND OIL	PCBs 1242	PCBs 1248	PCBs 1254	PCBs 1260	PCBs TOTAL
FILL AREA	TP01-J1	10900	ND	121.0	ND	45.10	ND	1380	ND	8.90	ND	ND	8.90 D
	TP02-J1	25100	ND	23.4	ND	5.00	ND	300	ND	1.06	0.553	ND	1.613
	TP03-J1	16.9	ND	15.4	ND	2.00	ND	126	ND	ND	ND	ND	ND
	TP05-J1	157.0	ND	19.7	ND	2.10	ND	284	ND	0.128	ND	ND	0.128
	TP06-J1	216.0	14.30	13.2	ND	2.30	ND	396	ND	1.56	ND	ND	1.56
	TP07-J1	140.0	12.90	29.5	ND	5.89	ND	939	ND	204	ND	ND	204 D
	TP08-J1	399.0	1.290	78.8	ND	10.20	ND	758	ND	4.15	ND	ND	4.15 D
	TP09-J1	18.0	ND	17.7	ND	1.78	ND	418	ND	ND	ND	ND	ND
	TP10-J1	21.8	ND	18.9	ND	1.48	ND	406	ND	ND	ND	ND	ND
	TP11-J1	325	0.203	282.0	ND	5.24	ND	1458	ND	0.933	0.447	ND	1.380
	TP12-J1A	14300	ND	243.0	ND	53.80	ND	1600	7.87	ND	2.48	ND	10.35 D
	TP12-J1B*	10400	ND	224.0	ND	52.00	ND	137	8.87	ND	2.07	ND	10.94 D
	TP18-J1	2980	0.131	44.0	ND	10.80	ND	ND	0.069	ND	0.241	ND	0.330
	J8265	1600	1.100	55.0	ND	13.00	0.160	NA	NA	NA	NA	NA	ND
	J8266	1400	0.520	80.0	ND	13.00	0.120	NA	NA	NA	NA	NA	ND
	J8267	2800	1.600	81.0	ND	11.00	0.092	NA	NA	NA	NA	NA	ND
	J8268	5400	1.200	120.0	ND	11.00	0.024	NA	NA	NA	NA	NA	ND
OUTFALL 001	SDS-1-1A	3160	17.70	157.0	ND	30.80	0.160	1485	ND	ND	2.35	ND	2.35 D
	SDS-1-1B*	4540	36.20	150.0	ND	24.90	0.250	1480	ND	ND	ND	ND	ND JSI
	SDS-1-2	438	0.619	19.7	ND	5.19	ND	641	ND	ND	ND	ND	ND
	SDS-1-3	5250	3.820	22.8	ND	15.30	ND	1440	ND	0.333	0.773	ND	1.106
	SDS-1-4	3860	0.142	29.7	ND	22.60	ND	1530	0.548	ND	0.339	ND	0.887
	SDS-1-5	214	11.60	64.7	ND	68.60	0.830	5750	0.542	ND	0.435	ND	0.977
	J8269	7600	7.200	43.0	ND	40.00	0.420	NA	6.90	ND	1.60	ND	8.50
OUTFALL 002	SDS-2-1	384	ND	11.4	ND	7.90	ND	4480	ND	ND	ND	ND	ND DR
	SDS-2-2	2060	ND	22.8	ND	13.10	ND	42500	ND	ND	ND	ND	ND DR
	SDS-2-3	1460	0.158	13.9	ND	11.40	ND	28100	ND	ND	ND	ND	ND
	SDS-2-4	1980	0.474	19.9	ND	15.50	ND	93900	0.800	ND	ND	ND	0.800
	SDS-2-5	1530	ND	16.3	ND	8.93	ND	37800	1.33	ND	ND	ND	1.33
	J8272	7300	1.100	54.0	ND	34.00	0.038	NA	4.00	ND	ND	ND	4.00
	J8274	NA	NA	NA	NA	NA	NA	100000	NA	NA	NA	NA	ND
BAGHOUSE AREA	LBS-1A	4300	0.365	9.8	ND	2570.00	ND	510	ND	ND	ND	ND	ND
	LBS-1B*	4440	ND	13.4	ND	36.50	ND	880	ND	ND	ND	ND	ND
	LBS-2	364	ND	18.9	ND	5.70	ND	439	ND	0.947	ND	ND	0.947 D
	LBS-3	287	5.07	17.5	ND	6.70	ND	2230	ND	15.0	ND	ND	15.0 D
	J8271	220000	12.0	170.0	ND	260.00	0.360	NA	NA	NA	NA	NA	ND
MAINTENANCE AREA	TP-22	8460	ND	52.7	ND	30.10	ND	22600	ND	ND	6.98	ND	6.98 D
	TP-23	1160	ND	37.1	ND	14.60	ND	5160	ND	ND	0.934	ND	0.934 D
	TP-24A	3810	0.337	84.0	ND	58.80	ND	3075	ND	ND	1.53	ND	1.83 D
	TP-24B*	4690	ND	108.0	ND	83.20	ND	3940	ND	ND	1.71	ND	1.71 D
PLANT 2 - SW CORNER	TP-25	72.7	ND	13.4	ND	1.38	ND	166	ND	ND	ND	ND	ND
NATIVE SOIL	NGB-1	5.7	ND	12.8	ND	ND	ND	1905	ND	ND	ND	ND	ND
	NGB-2	14.5	ND	24.0	ND	ND	ND	137	ND	0.897	ND	ND	0.897
	NGB-3	ND	ND	21.9	ND	ND	ND	160	ND	ND	ND	ND	ND
BACKGROUND	SGB-1	7.7	ND	8.2	ND	1.30	ND	270	ND	ND	ND	ND	ND
FORMER SUBSTATION	TSS-1	411	0.332	35.5	0.119	5.70	0.230	28400	ND	ND	ND	0.588	0.588 JSI
COMPARISON CRITERIA (2)		500	5.00	400	5.00	-	1.0	-	-	-	-	-	25

NOTES:

- Results presented in parts per million (ppm).
- Outlined values represent concentrations which exceed comparison criteria. Comparison criteria consist of:
 - 1) NYSDEC recommended cleanup goal; 2) EPA Health-based criteria; 3) EPA Regulatory Levels for Toxicity Characteristic Constituents; and 3) EPA 40 CFR Part 761 PCB Spill Cleanup policy, 1987.
- ND indicates analyte not detected above laboratory detection limits.
- TCLP: Toxicity Characteristic Leaching Procedure
- * Indicates sample is a duplicate.
- NA indicates analyte not tested for in that sample.
- Samples J8265-J8269, J8271, J8272 and J8274 were analyzed by others prior to this investigation.
- JSI = Surrogate recoveries outside of control limits, analysis repeated, same results obtained, interference suspected. Value is reported as an estimated value, due to failure of QA/QC requirements.
- D = Surrogate standards diluted out due to high concentrations of PCBs detected in sample.
- R = Sample re-analyzed outside of holding time.

edh:70185-40/analytes

FILE NO. 70185-40



FILE NO. 70185-40

CHARRETTE



USGS QUADRANGLE: SYRACUSE
EAST, N.Y.



H&A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

ROTH BROS. SMELTING CORP.
SYRACUSE, NEW YORK

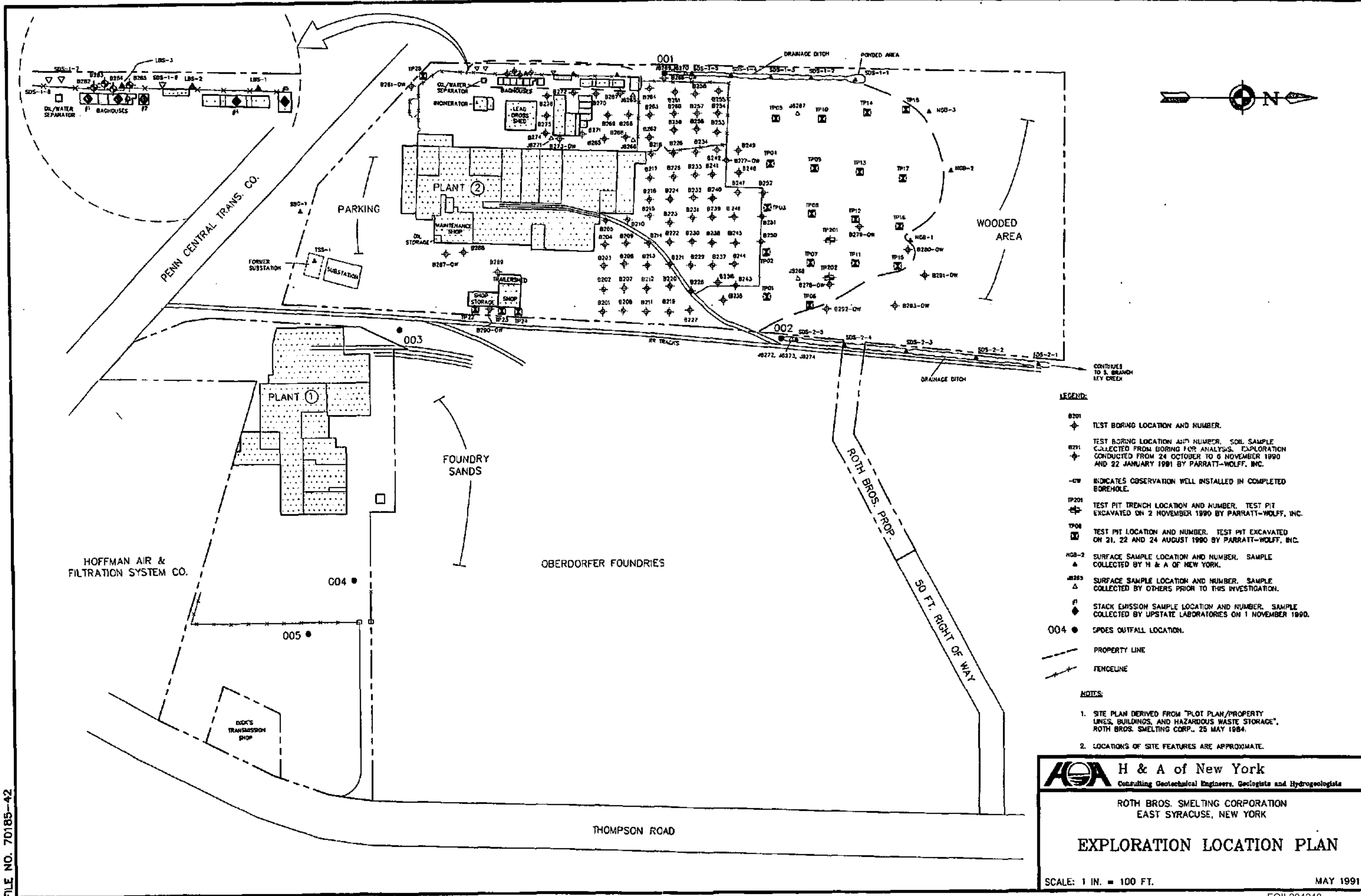
PROJECT LOCUS

SCALE: 1 IN. = 2000 FT.

MAY 1991

FOIL204247

FIGURE 1



H & A of New York
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

ROTH BROS. SMELTING CORPORATION
EAST SYRACUSE, NEW YORK

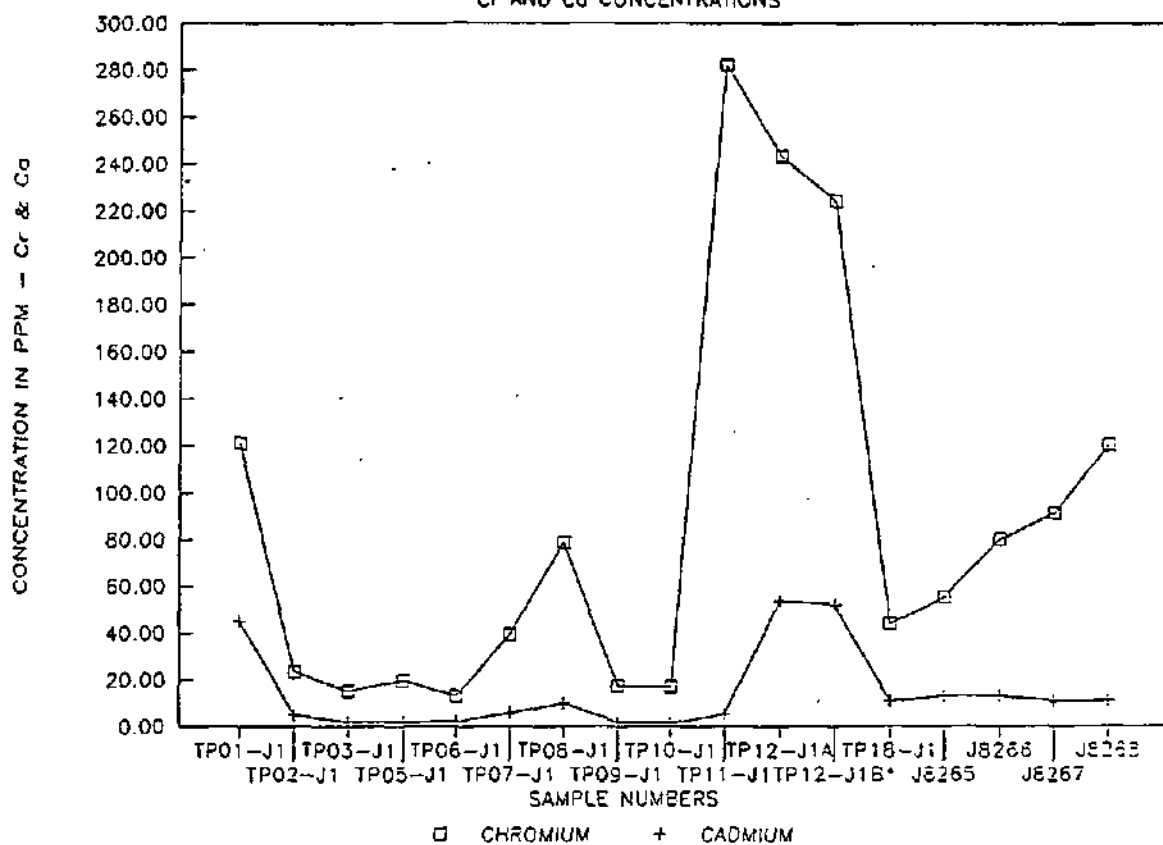
EXPLORATION LOCATION PLAN

SCALE: 1 IN. = 100 FT.

MAY 1991

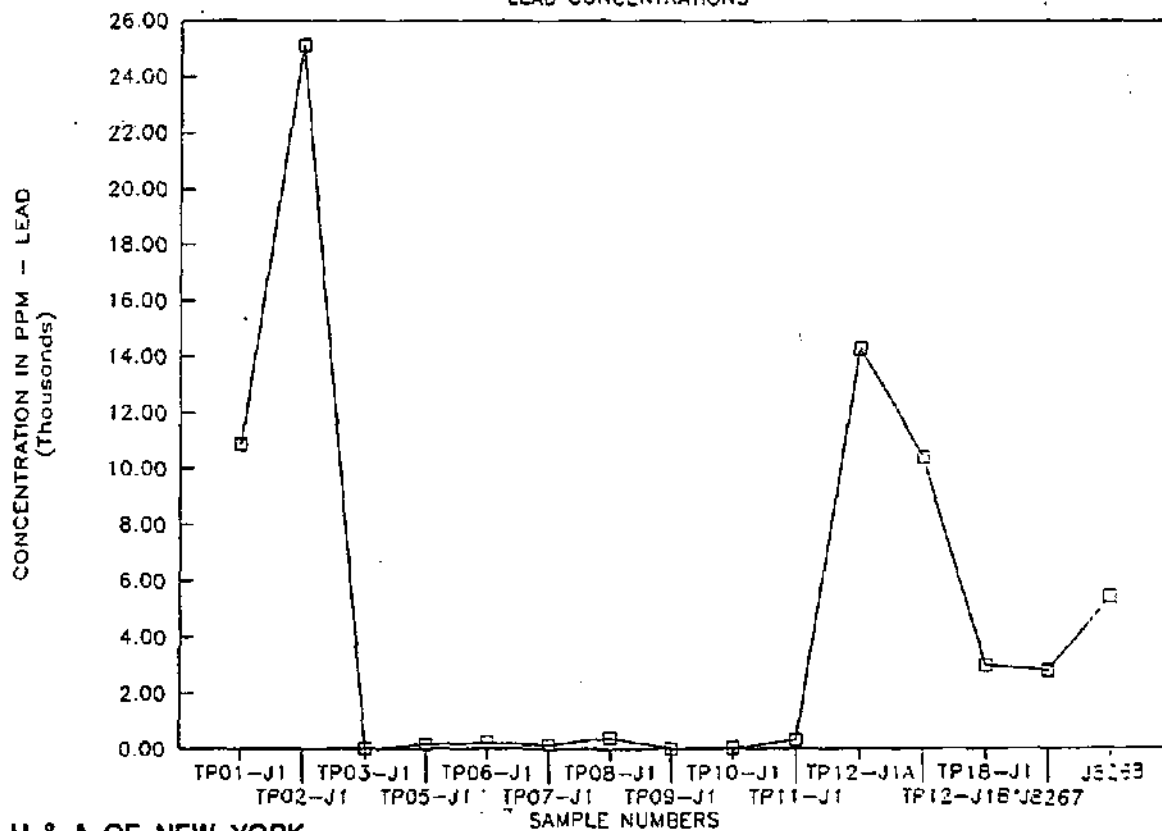
PLANT 2 FILL AREA

Cr AND Cd CONCENTRATIONS



PLANT 2 FILL AREA

LEAD CONCENTRATIONS

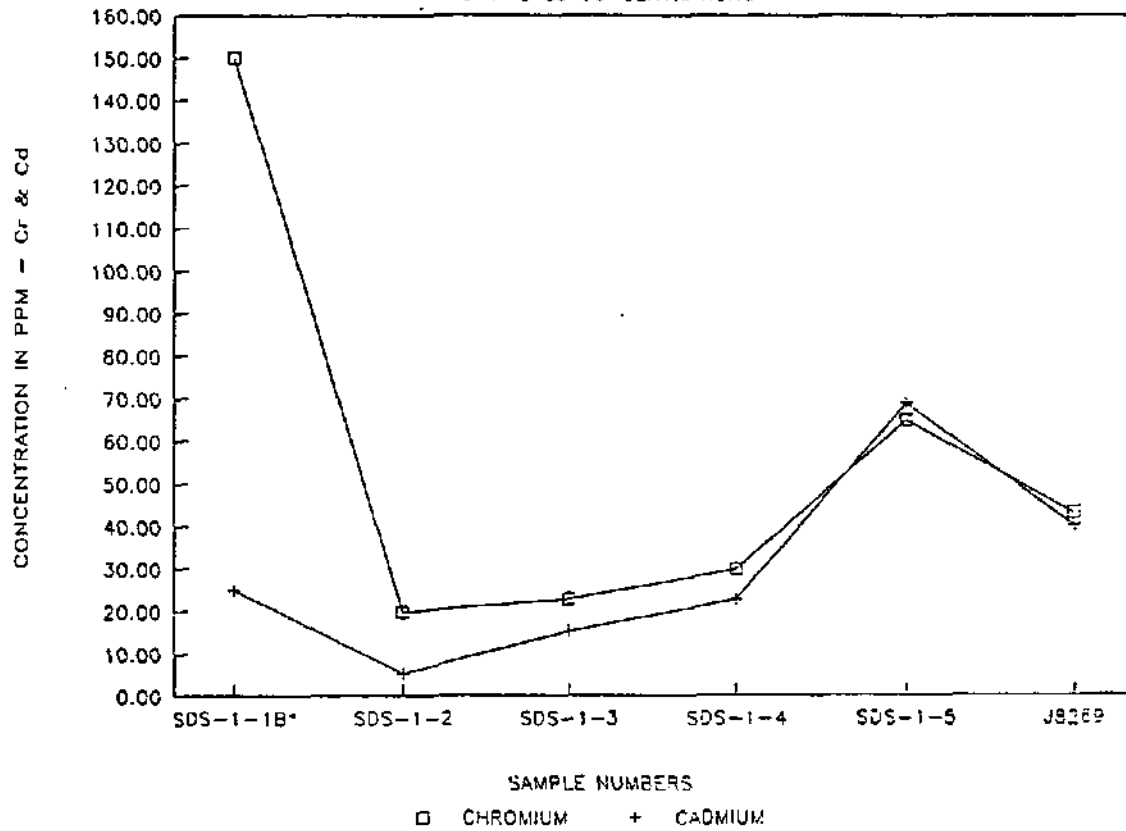


FILE NO.

H & A OF NEW YORK
ROCHESTER, NEW YORK

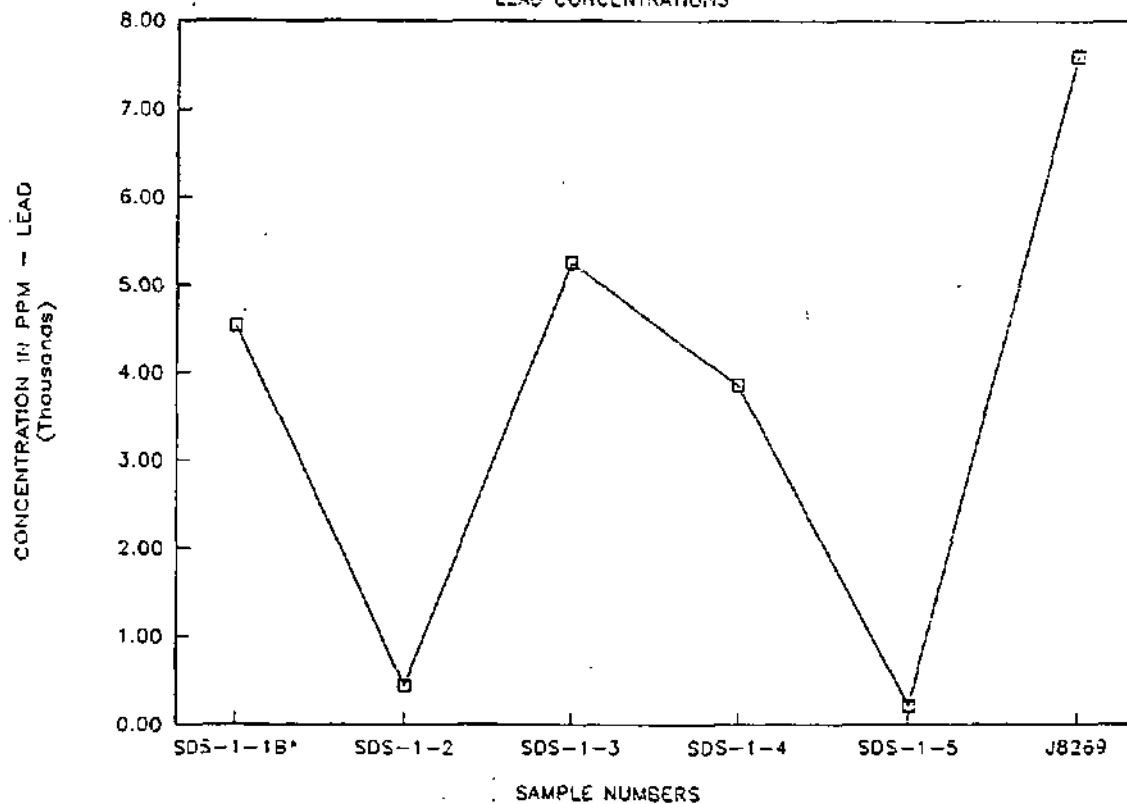
OUTFALL 001

Cr AND Cd CONCENTRATIONS



OUTFALL 001

LEAD CONCENTRATIONS



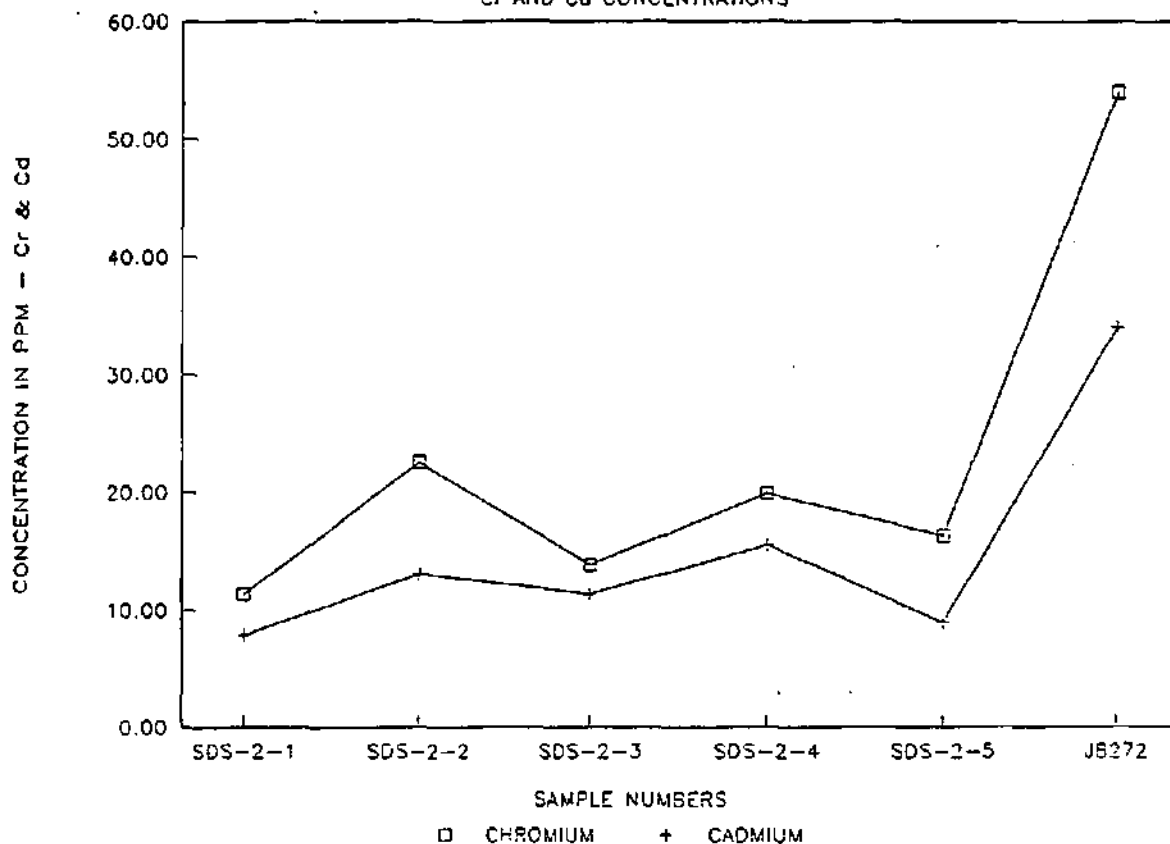
FILE NO.

H & A OF NEW YORK
ROCHESTER, NEW YORK

FOIL 204250 FIGURE 5

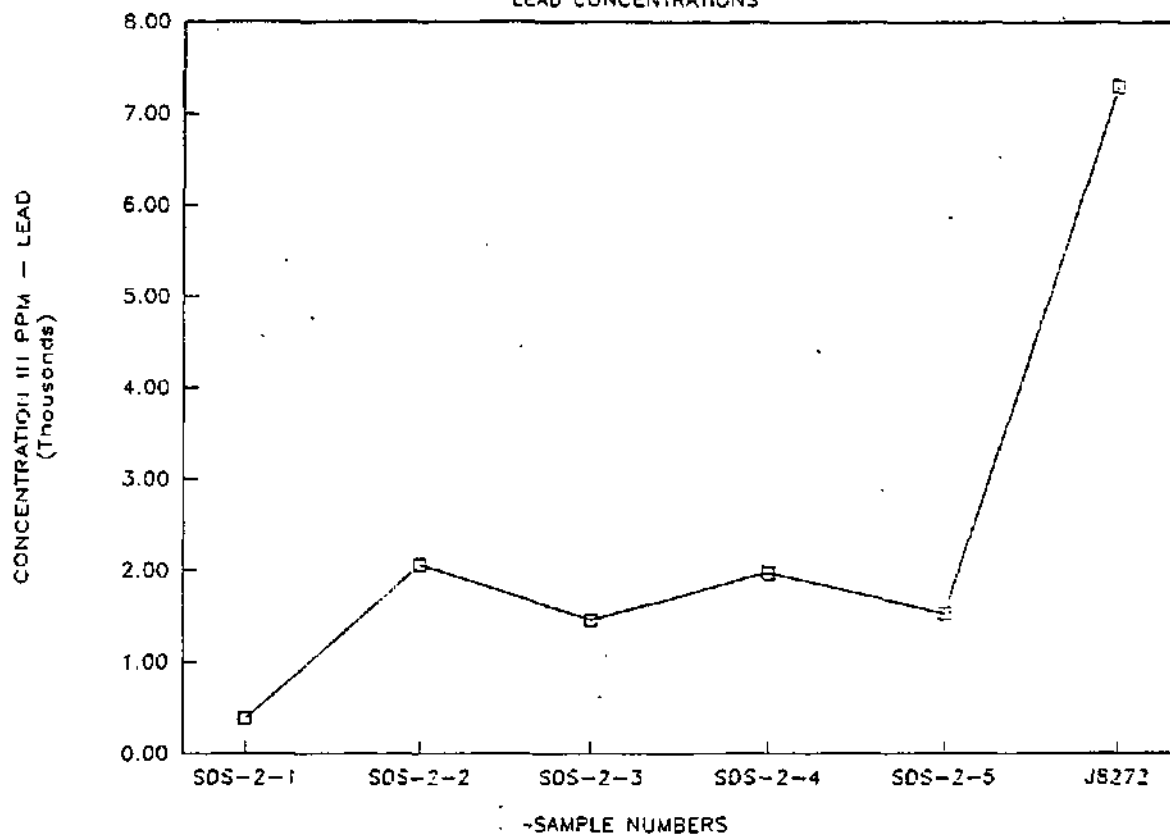
OUTFALL 002

Cr AND Cd CONCENTRATIONS



OUTFALL 002

LEAD CONCENTRATIONS



FILE NO.

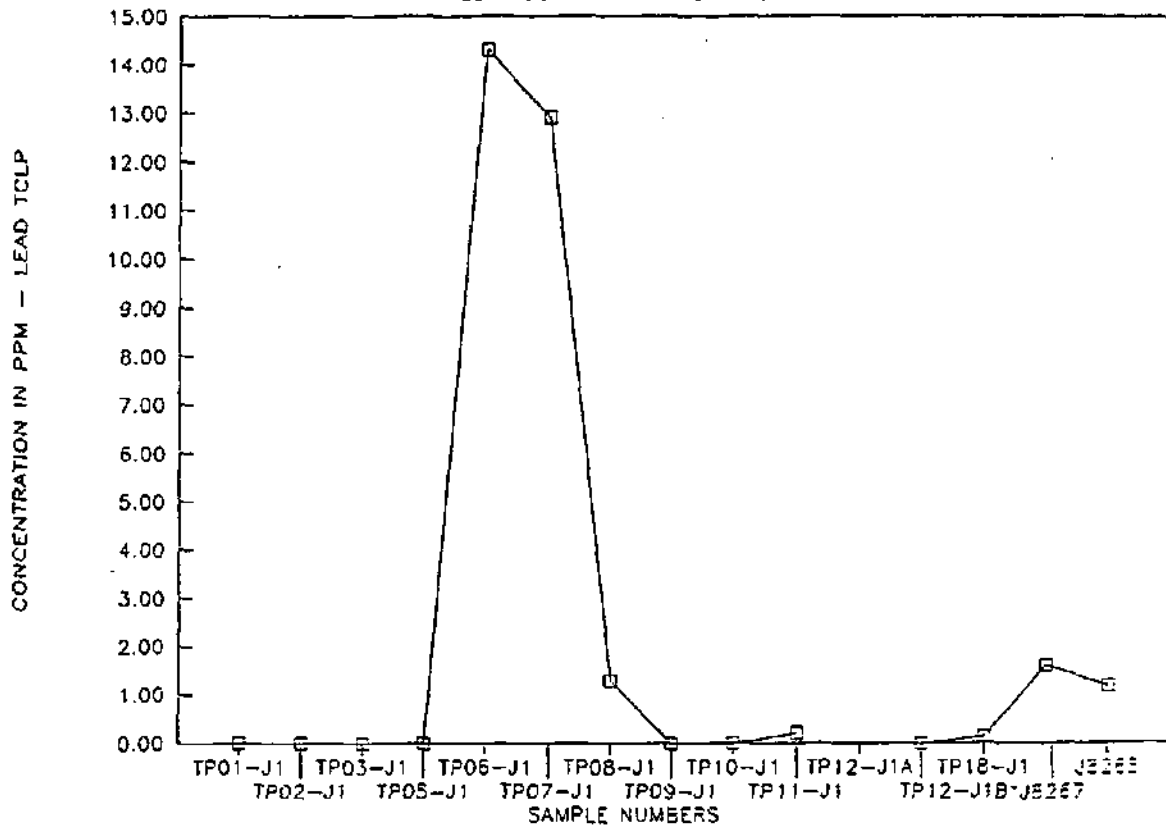
H & A OF NEW YORK
ROCHESTER, NEW YORK

FOU 204251

FIGURE 6

PLANT 2 FILL AREA

LEAD CONCENTRATIONS - TCLP



FILE NO.

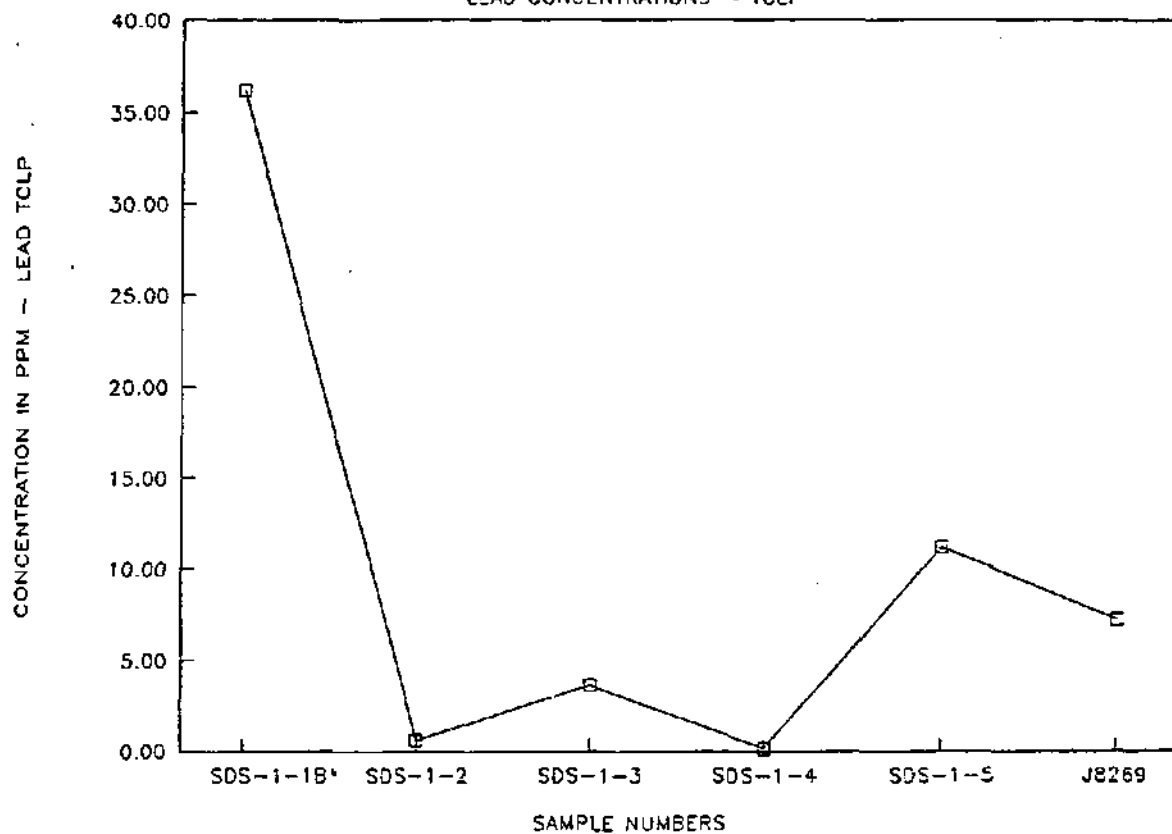
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ROCHESTER, NEW YORK

FOU 204252

FIGURE 7

OUTFALL 001

LEAD CONCENTRATIONS - TCLP



FILE NO.

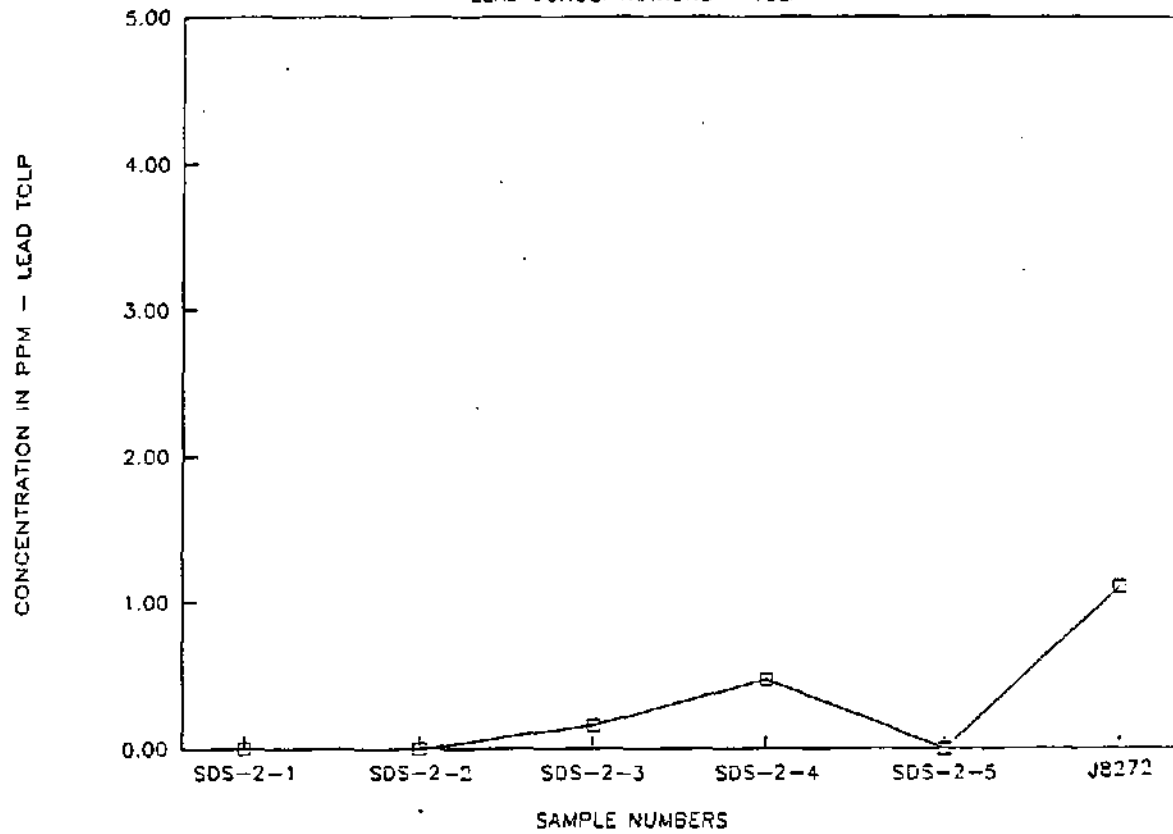
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ROCHESTER, NEW YORK

FOIL 204253

FIGURE 8

OUTFALL 002

LEAD CONCENTRATIONS - TCLP



FILE NO.

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FIGURE 9

APPENDIX A
Test Pit Reports



H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP01 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D						LOCATION: See Plan ELEVATION: EXPLORATION DATE: 21 Aug. 1990 H&A REP.: W. Lanik	
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS			REMARKS
2				Dark brown to black sandy coarse to fine GRAVEL, with ash, cinder particles, brick fragments, decomposed wood pieces and fragment, scrap metal, and one large concrete block (1'x 1'x 5'), wet below 4 ft. <div style="text-align: center;">-FILL-</div>			Water encountered at approximately 4.0 ft., water was dark brown to gray with oily sheen.
4	J1	4.0					
6		5.0		Light brown SILT, trace gravel, little to trace organics, with black mottling from 6.0 to 8.0 ft. <div style="text-align: center;">-LACUSTRINE-</div>			
8	81	6.0					
10		7.0		Bottom of Exploration at 10.0 ft.			
12		8.0					
WATER LEVEL				APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 10 feet		WIDTH 3 feet		DEPTH: 10.0 ft.
8/21/90	6.0	5.5					JAR SAMPLES: 1
			BOULDERS			BAG SAMPLES: 1	
			8" to 18" DIAMETER: No.		= Vol.	cu ft	WATER LEVEL: 5.5 ft.
* Hrs after completed			Over 18" DIAMETER: No.		= Vol.	cu ft	TEST PIT NO. TP01

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists			TEST PIT REPORT		TEST PIT NO. TP02 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D					LOCATION: See Plan ELEVATION: EXPLORATION DATE: 21 Aug. 1990 H&A REP.: W. Lanik	
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS	
2				Brown sandy GRAVEL, trace silt, trace cobbles and boulders, with scrap metal. <div style="text-align: center;">-FILL-</div>		
4	J1 B1	4.0				
6		5.0	5.0	Light brown and gray mottled SILT, little to trace organics. <div style="text-align: center;">-LACUSTRINE-</div>		
8				Bottom of Exploration at 6.0 ft.		
10						
12						
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 8.0 feet	WIDTH 3.0 feet	DEPTH: 6.0 ft. JAR SAMPLES: 1 BAG SAMPLES: 1 WATER LEVEL: -	
			BOULDERS			
			8" to 18" DIAMETER: No.	= Vol.	cu ft	
			Over 18" DIAMETER: No.	= Vol.	cu ft	
* Hrs after completed						TEST PIT NO. TP02 FOIL 204257

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP03 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVAHS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D						LOCATION: See Plan ELEVATION: EXPLORATION DATE: 21 Aug. 1990 H&A REP.: W. Lanik	
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS			REMARKS
2	J1 B1	3.0 4.0	1.0 4.0	Brown sandy GRAVEL, little silt, trace brick fragments.			
				Red brown sandy SILT, little gravel, trace cobbles.			
				-FILL-			
				Light brown mottled SILT.			
4				-LACUSTRINE-			
6				Bottom of Exploration at 5.5 ft.			
8							
10							
12							
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE				SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 7.0 feet		WIDTH 3.0 feet		DEPTH: 5.5 ft.
			BOULDERS				JAR SAMPLES: 1
			8" to 18" DIAMETER: No. = Vol. cu ft				BAG SAMPLES: 1
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft				WATER LEVEL: -
							TEST PIT NO. TP03 FOIL 204258

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP04 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-MOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D						LOCATION: See Plan ELEVATION: EXPLORATION DATE: 21 Aug. 1990 H&A REP.: W. Lanik	
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS			REMARKS
			0.5	Brown sandy GRAVEL, with brick fragments.			
				Red brown sandy SILT, little gravel, trace cobbles.			
2				-FILL-			
4			4.5	Light brown mottled SILT.			
	81	5.0		-LACUSTRINE-			
6		6.0		Bottom of Exploration at 6.0 ft.			
8							
10							
12							
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE				SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 7.0 feet		WIDTH 3.0 feet		DEPTH: 6.0 ft.
			BOULDERS				JAR SAMPLES: -
			8" to 18" DIAMETER: No. = Vol. cu ft				BAG SAMPLES: 1
			Over 18" DIAMETER: No. = Vol. cu ft				WATER LEVEL: -
* Hrs after completed							TEST ONLY 20259 TP04

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP05 FILE NO. 70185-40	
SUBJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D						LOCATION: See Plan ELEVATION: EXPLORATION DATE: 21 Aug. 1990 H&A REP.: W. Lanik	
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS		REMARKS	
			0.5	Brown sandy GRAVEL.			
				Red brown sandy SILT, little gravel, trace cobbles.			
-2-	J1	2.0		-FILL-			
	B1						
		3.0	3.0	Light brown mottled SILT, black organic layer from 3.0 to 3.2 ft.			
-4-				-LACUSTRINE-			
		5.0	4.5	Red brown sandy SILT, little gravel, trace cobbles.			
	82			-GLACIAL TILL-			
		6.0		Bottom of Exploration at 7.0 ft.			
-8-							
-10-							
-12-							
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE				SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 8.0 feet		WIDTH 3.0 feet		DEPTH: 7.0 ft.
							JAR SAMPLES: 1
			BOULDERS				BAG SAMPLES: 2
			8" to 18" DIAMETER: No. = Vol. cu ft				WATER LEVEL: -
% Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft				TEST PIT NO. OIL 2005260

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP06 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, MARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D				LOCATION: See Plan ELEVATION: EXPLORATION DATE: 21 Aug. 1990 H&A REP.: W. Lanik			
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS		
2	J1	2.0		Dark brown to black sandy SILT, little gravel, trace organics, with wood fragments and pieces and brick fragments, brown layer from 1.0 to 2.0 ft. -FILL-			
4	B1	3.0	3.0	Light brown coarse to medium sand, wet below approximately 5.0 ft. -LACUSTRINE-	Water entered excavation at approximately 5.0 ft.		
6				Bottom of Exploration 8.0 ft.			
8							
10							
12							
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE		SUMMARY		
DATE	TIME*	DEPTH FT	LENGTH 8.0 feet WIDTH 3.0 feet		DEPTH: 8.0 ft.		
8/21/90	2.0	5.5			JAR SAMPLES: 1		
			BOULDERS		BAG SAMPLES: 1		
			8" to 18" DIAMETER: No. = Vol. cu ft		WATER LEVEL: 5.5 ft.		
			Over 18" DIAMETER: No. = Vol. cu ft		TEST PIT NO. TP06 FOI 204261		
* Hrs after completed							

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP07 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D				LOCATION: See Plan ELEVATION: EXPLORATION DATE: 21 Aug. 1990 H&A REP.: W. Lanik			
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS		REMARKS	
2				Brown to dark brown gravelly SILT, little sand, trace boulders and cobbles, with brick fragments, wood fragments, scrap metal and plastic scraps.			
	J1	3.0		-FILL-			
4	81	4.0	4.0	Light brown medium SAND, little gravel, trace coarse sand, wet below 6.0 ft.			
6				-LACUSTRINE-		Water entered excavation at approximately 5.0 ft.	
8				Bottom of Exploration at 7.0 ft.			
10							
12							
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY	
DATE	TIME*	DEPTH FT	LENGTH 8.0 feet		WIDTH 3.0 feet	DEPTH: 7.0 ft.	
8/21/90	2.0	5.5				JAR SAMPLES: 1	
			BOULDERS			BAG SAMPLES: 1	
			8" to 18" DIAMETER: No. = Vol. cu ft			WATER LEVEL: 5.5 ft.	
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft			TEST PIT NO. TP07	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists			TEST PIT REPORT		TEST PIT NO. TP08 FILE NO. 70185-40
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D					LOCATION: See Plan ELEVATION: EXPLORATION DATE: 21 Aug. 1990 H&A REP.: W. Lanik
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
		1.0		Light brown and black mottled sandy SILT, little gravel, with brick fragments, reinforced concrete pieces and blocks, and wood pieces.	
	J1			-FILL-	
2	B1	2.0	2.0	Red brown sandy SILT, little gravel, trace cobbles.	
				-FILL-	
			3.0	Light brown sandy SILT, wet below approximately 6.0 ft.	Water entered the excavation at approximately 6.0 ft.
4					
6				-LACUSTRINE-	
8					
10				Bottom of Exploration at 9.0 ft.	
12					
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE		SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 10.0 feet	WIDTH 3.0 feet	DEPTH: 9.0 ft.
8/21/90	1.5	6.0			JAR SAMPLES: 1
			BOULDERS		BAG SAMPLES: 1
			8" to 18" DIAMETER: -No. = Vol. cu ft		WATER LEVEL: 6.0 ft.
			Over 18" DIAMETER: No. = Vol. cu ft		TEST PIT NO. TP08
* Hrs after completed					

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP09 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D						LOCATION: See Plan ELEVATION: EXPLORATION DATE: 21 Aug. 1990 H&A REP.: W. Lanik	
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS			REMARKS
2				Brown to red brown gravelly SILT, little sand, with brick fragments and pieces, and wood pieces, black staining from 1.0 to 2.0 ft. <div style="text-align: center;">-FILL-</div>			
	J1	3.0					
4	81	4.0	4.0	Light brown medium SAND and gray-brown mottled SILT, with cobbles boulders. <div style="text-align: center;">-LACUSTRINE-</div>			
6				Bottom of Exploration at 7.0 ft.			
8							
10							
12							
WATER LEVEL				APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 8.0 feet WIDTH 3.0 feet			DEPTH: 7.0	
			BOULDERS			JAR SAMPLES: 1	
			8" to 18" DIAMETER: No. = Vol. cu ft			BAG SAMPLES: 1	
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft			WATER LEVEL: -	
						TEST PCD 004264 TP09	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists			TEST PIT REPORT			TEST PIT NO. TP10 FILE NO. 70185-40		
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE & DOYLE CONTRACTOR: PARRATT-WOLF, INC. EQUIPMENT USED: JOHN DEERE 410-D						LOCATION: See Plan ELEVATION: EXPLORATION DATE: 21 Aug. 1990 H&A REP.: W. Lanik		
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS			REMARKS	
			1.5	Light brown sandy SILT, little gravel. -FILL-			Water seeped into excavation at approximately 7.0 ft.	
2				Red brown sandy SILT, trace gravel.				
	J1	3.0		-FILL-				
4	B1	4.0						
			5.0	Light brown medium to fine SAND, trace gravel, some gray brown mottling, wet below approximately 7.0 ft.				
6								
8								
10								
12								
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE				SUMMARY	
DATE	TIME*	DEPTH FT	LENGTH 10.0 feet		WIDTH 3.0 feet		DEPTH: 7.5 ft.	
8/21/90	2.0	7.0					JAR SAMPLES: 1	
			BOULDERS				BAG SAMPLES: 1	
			8" to 18" DIAMETER: No.		= Vol.	cu ft	WATER LEVEL: 7.0 ft.	
* Hrs after completed			Over 18" DIAMETER: No.		= Vol.	cu ft	TEST PIT NO. TP10 FOIL 204265	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists			TEST PIT REPORT		TEST PIT NO. TP11 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D					LOCATION: See Plan ELEVATION: EXPLORATION DATE: 21 Aug. 1990 H&A REP.: W. Lanik	
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS		REMARKS
		1.0		Brown sandy GRAVEL, with yellow and black mottling, with wood fragments, ash and cinder particles, and scrap metal.		
	J1					
2	B1	2.0	2.0	-FILL-		
				Brown gravelly SILT, little sand.		
				-FILL-		
4						
			4.5	Light brown and gray brown mottled SILT.		
				-LACUSTRINE-		
6				Bottom of Exploration at 6.0 ft.		
8						
10						
12						
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 10.0 feet		WIDTH 3.0 feet	DEPTH: 6.0 ft.
8/21/90	2.0	5.5				JAR SAMPLES: 1
			BOULDERS			BAG SAMPLES: 1
			8" to 18" DIAMETER: -No. = Vol. cu ft			WATER LEVEL: 5.5 ft.
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft			TEST PIT NO. TP11

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP12 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D						LOCATION: See Plan ELEVATION: EXPLORATION DATE: 22 Aug. 1990 H&A REP.: W. Lanik	
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS			REMARKS
2				Dark brown to black gravelly SILT, with brick and asphalt pieces, wood pieces, scrap metal, ash and cinder particles, moist to wet below approximately 3.0 ft. <div style="text-align: center;">-FILL-</div>			
	J1A	3.0					
4	J1B	4.0	4.0	Light brown medium to fine SAND, trace gravel, some gray-brown mottling, wet. <div style="text-align: center;">-LACUSTRINE-</div>			
6				Bottom of Exploration at 8.0 ft.			
8							
10							
12							
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE				SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 10.0 feet		WIDTH 3.0 feet		DEPTH: 8.0 ft.
8/22/90	2.5	5.5					JAR SAMPLES: 2
			BOULDERS				BAG SAMPLES: .
			8" to 18" DIAMETER: No.		= Vol.	cu ft	WATER LEVEL: 5.5 ft.
* Hrs after completed			Over 18" DIAMETER: No.		= Vol.	cu ft	TEST PIT NO. TP12

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists			TEST PIT REPORT		TEST PIT NO. TP13 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D					LOCATION: See Plan ELEVATION: EXPLORATION DATE: 22 Aug. 1990 H&A REP.: W. Lanik	
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS	
				Light brown to dark brown sandy SILT, some to little gravel, with wood pieces, scrap metal, and concrete blocks.		
2	81	2.0				
		3.0		-FILL-		
4			4.0	Light brown medium to fine SAND, trace gravel, wet below 6.0 ft.		
6				-LACUSTRINE-		
8				Bottom of Exploration at 8.0 ft.		
10						
12						
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 10.0 feet WIDTH 3.0 feet			DEPTH: 8.0 ft.
8/22/90	2.0	5.5				JAR SAMPLES: -
			BOULDERS			BAG SAMPLES: 1
			8" to 18" DIAMETER: No. = Vol. cu ft			WATER LEVEL: 5.5 ft.
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft			TEST PIT NO. 204268-13

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP14 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D				LOCATION: See Plan ELEVATION: EXPLORATION DATE: 22 Aug. 1990 H&A REP.: W. Lanik			
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS			REMARKS
-2-	81	2.0		Dark brown sandy SILT, little gravel, with wood pieces, concrete blocks and asphalt blocks, roots from 2.0 to 3.0 ft.			
-4-		3.0		-FILL-			
-6-			4.5	Light-brown coarse to medium SAND, trace gravel, wet.			
-8-				-LACUSTRINE-			
-10-				Bottom of Exploration at 7.0 ft.			
-12-							
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE				SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 8.0 feet		WIDTH 3.0 feet		DEPTH: 7.0 ft.
8/22/90	2.0	5.5					JAR SAMPLES: -
			BOULDERS				BAG SAMPLES: 1
			8" to 18" DIAMETER: No.		= Vol.	cu ft	WATER LEVEL: 5.5 ft.
* Hrs after completed			Over 18" DIAMETER: No.		= Vol.	cu ft	TEST PFD NO 0426 TP14

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP15 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D				LOCATION: See Plan ELEVATION: EXPLORATION DATE: 22 Aug. 1990 H&A REP.: W. Lanik			
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS			REMARKS
-2-			2.0	Brown gravelly SILT, little to trace sand, roots at 2.0 ft. -FILL-			Water seeped into excavation at 7.0 ft.
-4-				Light brown fine sandy SILT, laminated, wet below approximately 6.0 ft., dark brown organic layer from 2.0 to 3.0 ft. -LACUSTRINE-			
-6-	B1	6.0					
-8-		7.0					
-10-				Bottom of Exploration at 8.0 ft.			
-12-							
WATER LEVEL				APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 10.0 feet		WIDTH 3.0 feet	DEPTH: 8.0 ft.	
8/22/90	2.0	6.5				JAR SAMPLES: -	
			BOULDERS			BAG SAMPLES: 1	
			8" to 18" DIAMETER: No. = Vol. cu ft			WATER LEVEL: 6.5 ft.	
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft			TEST PIT NO. TP15	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP16 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION				LOCATION: See Plan		ELEVATION:	
LOCATION: EAST SYRACUSE, NEW YORK				EXPLORATION DATE: 22 Aug. 1990		H&A REP.: W. Lanik	
CLIENT: NIXON, HARGRAVE DEVANS & DOYLE							
CONTRACTOR: PARRATT-WOLFF, INC.							
EQUIPMENT USED: JOHN DEERE 410-D							
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS		REMARKS	
2	B1	2.0		Brown silty GRAVEL, little sand, with concrete and asphalt blocks, roots at 4.0 ft.			
		3.0		-FILL-			
4			4.0	Light brown mottled SILT, laminated, wet below approximately 6.5 ft., dark brown organic silt layer from 4.0 to 4.5 ft.		Water seeped into pit slowly at approximately 6.5 ft.	
6				-LACUSTRINE-			
8			8.0	Bottom of Exploration at 8.0 ft.			
10							
12							
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY	
DATE	TIME*	DEPTH FT	LENGTH 10.0 feet		WIDTH 3.0 feet	DEPTH: 8.0 ft.	
8/22/90	1.5	7.0				JAR SAMPLES: -	
			BOULDERS			BAG SAMPLES: 1	
			8" to 18" DIAMETER: No. = Vol. cu ft			WATER LEVEL: 7.0 ft.	
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft			TEST PIT NO. TP16	

R&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists			TEST PIT REPORT		TEST PIT NO. TP17 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D					LOCATION: See Plan ELEVATION: EXPLORATION DATE: 22 Aug. 1990 N&A REP.: W. Lanik	
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS	
2	B1	2.0		Brown silty GRAVEL, with concrete and asphalt blocks and wood pieces, roots from 4.5 to 5.0 ft. <div style="text-align: center;">-FILL-</div>	Water seeped into excavation at approximately 6.5 ft.	
		3.0				
4			5.0	Light brown mottled SILT, wet below approximately 7.0 ft., dark brown organic layer from 5.0 to 5.5 ft. <div style="text-align: center;">-LACUSTRINE-</div>		
6				Bottom of Exploration at 8.0 ft.		
8						
10						
12						
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 10.0 feet WIDTH 3.0 feet		DEPTH: 8.0 ft.	
8/22/90	1.0	7.5			JAR SAMPLES: -	
			BOULDERS		BAG SAMPLES: 1	
			8" to 18" DIAMETER: No. = Vol. cu ft		WATER LEVEL: 7.5 ft.	
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft		TEST PIT NO. TP17	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists			TEST PIT REPORT		TEST PIT NO. TP18 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D				LOCATION: See Plan ELEVATION: EXPLORATION DATE: 22 Aug. 1990 H&A REP.: W. Lanik		
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS		REMARKS
2				Brown gravelly coarse to medium SAND, with concrete pieces and blocks, wood pieces, scrap metal and cinder particles, roots at 4.0 ft.		
	J1	3.0		-FILL-		
4	B1	4.0	4.0	Light brown mottled SILT, wet below approximately 6.0 ft.		Water seeped into excavation at 6.5 ft.
6				-LACUSTRINE-		
8			7.0	Bottom of Exploration at 7.0 ft.		
10						
12						
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 10.0 feet		WIDTH 3.0 feet	DEPTH: 7.0 ft.
8/22/90	1.5	6.5				JAR SAMPLES: 1
			BOULDERS			BAG SAMPLES: 1
			8" to 18" DIAMETER: No. = Vol. cu ft			WATER LEVEL: 6.5 ft.
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft			TEST PIT NO. TP18

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP22 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-0				LOCATION: See Plan ELEVATION: EXPLORATION DATE: 24 Aug. 1990 H&A REP.: W. Lanik			
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS		REMARKS	
2	J1	1.0	1.0	Dark brown gravelly coarse to medium sand, trace cinders.		Black oil slick on water.	
		-FILL-					
		1.5	1.5	Black oil stained silty GRAVEL.			
		Light brown silty fine SAND, wet.					
4				-LACUSTRINE-			
				Bottom of Exploration at 4.0 ft.			
6							
8							
10							
12							
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY	
DATE	TIME*	DEPTH FT	LENGTH 5.0 feet		WIDTH 3.0 feet	DEPTH: 4.0 ft.	
8/24/90	1.0	3.0				JAR SAMPLES: 1	
			BOULDERS			BAG SAMPLES: -	
			8" to 18" DIAMETER: No. = Vol. cu ft			WATER LEVEL: 3.0 ft.	
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft			TEST PIT NO. 274 TP22	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists			TEST PIT REPORT		TEST PIT NO. TP23 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D					LOCATION: See Plan ELEVATION: EXPLORATION DATE: 24 Aug. 1990 H&A REP.: W. Lanik	

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
		0.5		Brown to dark brown sandy GRAVEL, with asphalt pieces and cinder particles.	Seep at 3.3 ft.
	J1	1.0	1.0	-FILL-	
				Brown gravelly coarse to medium SAND.	
2			2.0	-FLUVIAL-	
				Light brown fine SAND, with occasional silt seams.	
				-LACUSTRINE-	
4				Bottom of Exploration at 3.5 ft.	
6					
8					
10					
12					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE		SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 4.0 feet	WIDTH 3.0 feet	DEPTH: 3.5 ft.
					JAR SAMPLES: 1
			BOULDERS		BAG SAMPLES: -
			8" to 18" DIAMETER: No.	= Vol. cu ft	WATER LEVEL: -
* Hrs after completed			Over 18" DIAMETER: No.	= Vol. cu ft	TEST PIT NO. TP23

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP24 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, MARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D						LOCATION: See Plan ELEVATION: EXPLORATION DATE: 24 Aug. 1990 H&A REP.: W. Lanik	

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
	J1	0.5		Brown to black sandy GRAVEL, with asphalt pieces and blocks.	
		1.0	1.0	-FILL-	
2				Light brown mottled SILT and fine SAND, wet below 3.0 ft.	
				-LACUSTRINE-	Seep at 3.0 ft.
4				Bottom of Exploration at 4.0 ft.	
6					
8					
10					
12					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE		SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 4.0 feet	WIDTH 3.0 feet	DEPTH: 4.0 ft.
					JAR SAMPLES: 1
			BOULDERS		BAG SAMPLES: -
			8" to 18" DIAMETER: No. = Vol. cu ft		WATER LEVEL: -
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft		TEST PIT NO. TP24 FOIL 209276

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. TP25 FILE NO. 70185-40	
PROJECT: ROTH BROS. SMELTING CORPORATION LOCATION: EAST SYRACUSE, NEW YORK CLIENT: NIXON, HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC. EQUIPMENT USED: JOHN DEERE 410-D						LOCATION: See Plan ELEVATION: EXPLORATION DATE: 24 Aug. 1990 H&A REP.: W. Lanik	
SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS			REMARKS
2	JT	1.5	1.5	Light brown gravelly fine SAND, little silt.			Water seep at 3.0 ft.
		2.0	2.0	-FILL-			
		Dark brown SILT, trace organics.					
Light brown silty fine SAND, wet.							
4				-LACUSTRINE-			
				Bottom of Exploration at 4.0 ft.			
6							
8							
10							
12							
WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE				SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 5.0 feet		WIDTH 3.0 feet		DEPTH: 4.0 ft.
							JAR SAMPLES: 1
			BOULDERS				BAG SAMPLES: -
			8" to 18" DIAMETER: No. = Vol. cu ft				WATER LEVEL: -
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft				TEST PIT NO. TP25

PRIVILEGED AND CONFIDENTIAL
ADDITIONAL ENVIRONMENTAL INVESTIGATION
ROTH BROS. SMELTING CORP. - PLANT 2
EAST SYRACUSE, NEW YORK

SECTION 2 OF 2

by

H&A of New York
Rochester, New York

for

Nixon, Hargrave, Devans & Doyle
Rochester, New York

File No. 70185-42

May 1991



FOIL204278

PART II

EXECUTIVE SUMMARY

This section of the report presents the results of the additional environmental investigation at the Roth Bros. Smelting Corp. - Plant 2 site in East Syracuse, New York. The intent of the investigation was to continue investigation of Plant 2 and further evaluate several site areas for potential presence and extent of hazardous materials previously identified in H&A's initial environmental investigation, as summarized in Section 1.

H&A's initial investigation identified several Plant 2 areas for additional study. The additional environmental investigation objectives in each area were to evaluate the presence of selected oil and/or hazardous substances associated with the area; apparent extent of the substances; and potential remedial alternatives for areas found to contain the substances. Specific areas of investigation included: 1) an equipment maintenance area and associated underground tanks for petroleum product release; 2) an area of fill (paved and unpaved) north of Plant 2 which showed elevated lead and PCB levels in selected areas in the initial investigation; 3) a baghouse/hazardous waste storage area, again where previous sampling showed elevated lead and PCB concentrations; and, 4) associated drainageways associated with the fill and baghouse areas.

This additional investigation included the installation of 93 shallow test borings, 12 observation wells, and 2 test pit trenches. Fifty-eight soil samples were collected and analyzed for total lead, TCLP lead and PCBs. Ten soil samples were collected and analyzed for total organic carbon and cation exchange capacity. In addition, 17 samples (soil, baghouse dust and emission particulate) were collected and submitted to the University of Rochester for lead isotopic analyses to assist in evaluation of lead sources. Groundwater from each of the observation wells was collected and analyzed for aluminum, calcium, iron, potassium and lead (both total and dissolved metals) and PCBs. Two groundwater samples were also analyzed for total petroleum hydrocarbons from the maintenance shop tank area.

Results of analyses performed on samples collected during the additional investigation indicate the following:

Maintenance Shop Area

- o Four soil borings, two of which were converted to groundwater monitoring wells, did not indicate the significant presence of petroleum related compounds. Total petroleum hydrocarbon (TPH) analyses were performed on



groundwater samples from the wells and 4.52 ppm TPH was detected in one well. It is H&A's opinion this concentration is not indicative of free petroleum or significant dissolved petroleum in the samples.

Some petroleum staining in soil was evident in our initial investigation in this area. Under current NYSDEC policy, if such soils require excavation and removal from the site (such as for foundation construction), special handling or disposal requirements may apply. If such work is undertaken in the future in this area H&A recommends Roth Bros. check on applicable criteria for petroleum residues in soils.

Fill and Baghouse Areas

- o Total lead concentrations detected in soil samples were above the comparison criteria (based on a review of USEPA Records of Decisions and NYSDEC's responses for remediation at other sites) of 500 ppm at several locations in the Fill and Baghouse areas. These areas may require remedial action.
- o TCLP lead concentrations were detected in soil samples at concentrations above the 5.0 ppm EPA regulatory limit in several soil sample locations in the Fill and Baghouse areas. These samples are, therefore, characteristically hazardous by this method and may require remedial action.
- o PCBs were detected in several samples in the Fill and Baghouse areas above the EPA PCB Spill Cleanup Guidance Concentration 25 ppm and may require remedial action.

Samples with high lead concentrations also frequently exceeded the TCLP regulatory limit. Several of the samples with high PCB concentrations also had high lead concentrations.

Groundwater

Twelve wells were installed across the site to determine groundwater flow direction and to collect samples at both upgradient and downgradient locations.

Evaluation of groundwater for potential presence of smelter related compounds derived from the fill and baghouse areas was performed by sampling for possible smelter-specific compounds (lead, PCBs) as well as indicator parameters to evaluate effects of sediment in samples (iron, calcium, aluminium, potassium and leachability (pH)).



Lead was detected in one groundwater sample (filtered for soluble lead) at 0.117 ppm during an initial sampling round. The lead presence may have been due to turbidity in the groundwater, therefore the well was redeveloped to reduce the turbidity. A second sampling event, following redevelopment of the well, indicated a concentration of 0.0142 ppm dissolved lead, below the NYS Class GA (protected for drinking water source) groundwater quality criteria of 0.025 ppm.

Iron (dissolved) was detected in groundwater in B278-OW, B279-OW and B290-OW at concentrations above the NYS water quality criteria of 0.300 ppm. The criteria is an aesthetic-based, not health-based, criteria. Concentrations of 1 to 5 ppm dissolved iron in groundwater are common, indicating the concentrations detected on site fall within the common range, with one exception. B279-OW, in the fill area, had a concentration of 8.75 ppm iron. The high iron may be due in part, to natural conditions in the groundwater.

In summary, it does not appear the groundwater has been adversely impacted by the presence of fill at the site. Additionally, based on the apparent groundwater flow direction and the results of groundwater analyses, it is unlikely there would be off-site migration of metals in groundwater.

Remedial Action

Based on site observations and sampling, it appears several areas of soil/fill material and sediments in the Fill and Baghouse areas (an estimated total of 19,500 tons) may require remedial action for the presence of lead (TCLP and total) and PCBs. Based on the observed groundwater flow direction and analyses of groundwater collected downgradient from the affected soils, it does not appear the groundwater will require remedial action.

Based on H&A's evaluation, immediate remedial action on site is not necessary for the following reasons. The lead/PCBs are not migrating to groundwater despite being in place for up to 12+ years (based on former storage in the area from 1976 to 1979). The lead/PCBs concentrations which exceed regulatory criteria in soil/fill appear to be confined to that medium. There is no evidence that lead/PCB concentrations have migrated offsite. It is likely that the fill and immediately underlying soils would exhibit low hydraulic conductivity. Public access to the affected area is restricted, and plant use is limited to occasional plant personnel visits to take hardware in and out of storage. Therefore, no significant threat to site or public health exists.



H&A of New York was requested to evaluate remedial alternatives and therefore reviewed six remedial action alternatives including no action, in-situ solidification, silicate stabilization, capping in-place, off-site landfill disposal, and in-situ vitrification. The alternatives were reviewed for applicability to the site, potential effectiveness, performance and cost. Based on an initial review of the six remedial alternatives, if remediation is to be performed H&A recommends the capping-in-place alternative.

This alternative is considered reliable technology and will effectively reduce infiltration into and flow-through of water in the fill materials, thereby significantly reducing the likelihood of migration of the compounds of concern. Capping reduces the potential for exposure by migration and contact routes. Additionally, the capping-in-place alternative is the most cost effective measure for remediation.

Based on surface and sediment sampling in the paved baghouse/scrap storage area, it appears lead dusts from current operations are present on pavement surface areas as well as in the surface-water drainage system along the western property boundary. H&A recommends housekeeping practices be reviewed and revised to prevent future deposition of baghouse dusts in these areas. The surface of the paved areas should be cleaned, and wastes generated from the cleaning be handled/disposed appropriately. Sediments within the storm sewer pipe should be flushed out, collected and properly disposed. It may be possible to incorporate sediments from this cleaning in the stabilization/capping remediation of the fill & baghouse areas as described above. H&A recommends confirmation sampling of the paved area and the drainage pipe be conducted following the clean-up actions.



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I. INTRODUCTION

This document is a report on the performance and results of an additional site investigation of the Roth Bros. Smelting Corporation (Roth Bros.) Plant 2 in East Syracuse, New York. The investigation was performed to assist Nixon, Hargrave, Devans & Doyle (NHDD) and Roth Bros. in evaluating the potential presence of oil and hazardous materials on-site. H&A of New York previously conducted an initial investigation (contained in Section 1). The results of the initial investigation identified several areas of concern as requiring further investigation on the Plant 2 property.

The purpose of the additional environmental investigation was to determine the potential presence of oil and hazardous materials and their apparent areal extent. Potential remedial alternatives for the affected areas were then reviewed in light of the compounds detected. Four general areas of study were identified including 1) an equipment maintenance/underground petroleum tank storage area for potential presence of petroleum products in soil and groundwater; 2) an area of fill (paved/unpaved) north of Plant 2 which showed high concentrations of lead and PCBs in soil in the previous investigation; 3) a smelter dust baghouse/hazardous waste storage area, again for potential presence of lead and PCBs; and 4) drainageways associated with the fill and baghouse areas.

This document briefly summarizes relevant existing information from the initial investigation regarding the potential presence of oil and hazardous materials on the Plant 2 site. The report outlines the additional work scope items and quality assurance procedures utilized to evaluate and characterize the nature and extent of compounds in soil, groundwater and sediment at the site potentially associated with smelting activities. The additional environmental investigation consisted of a limited subsurface investigation including test borings; test pit explorations; groundwater observation well installations; limited sampling and laboratory analyses of soil, fill and groundwater; and a limited evaluation of potential remedial activities. These activities are described in greater detail in the following report sections.

II. SITE LOCATION AND CURRENT CONDITIONS

The site location, current conditions and site operations are described in H&A's initial environmental investigation report, contained in Section 1.

III. PREVIOUS INVESTIGATIONS

H&A of New York conducted an initial environmental investigation for NHDD. This initial investigation was intended to evaluate several potential source areas of oil and hazardous materials at Roth Bros. Plant 2. The results may be found in Section 1 of this report.

Summary - In summary, two occurrences of oil and hazardous materials were identified during the initial investigation. Oil stained soils were observed in the maintenance area, but appeared to constitute a solid waste. Since the soils do not currently require excavation for construction or other projects, leaving them in place would be consistent with current NYSDEC policy. However, presence of free product petroleum on groundwater would require remediation and therefore recommendations were made to evaluate this condition, as described above.

Fill and sediment which appeared to be characteristically hazardous by TCLP lead criteria and/or the presence of PCBs above 25 ppm is present in two areas of the plant, the fill area north of Plant 2 and the Baghouse/Outfall 001/Dross area (hereinafter Baghouse area). In order to evaluate the need to remediate or remove the materials from the site, additional study was determined to be required to better determine the source(s), apparent extent and whether groundwater had been affected.

IV. SUBSURFACE INVESTIGATIONS

The purpose of the additional study has been to continue the assessment of the Plant 2 site in accordance with the recommendations outlined during the initial investigation. The subsurface exploration program developed for this investigation consisted of test borings, test pits and observation well installations.

Explorations were conducted between 24 October and 6 November 1990 and 22 January 1991 by Parratt-Wolff, Inc. of Syracuse, New York, under the observation of H&A of New York personnel. Exploration locations are shown on Figure 2; test boring reports and test pit reports are presented in Appendices A and B, respectively.

Brief discussions of the subsurface explorations conducted and the fill conditions encountered for each area explored are presented below. Native materials encountered below the fill were generally composed of lacustrine sand and silt overlying glacial till. In some instances, there was an absence of lacustrine materials.

Groundwater conditions were evaluated with the installation of 12 observation wells across the site including both upgradient and downgradient locations. The wells were surveyed and groundwater flow direction determined. Wells were sampled, and groundwater submitted for analyses (see Section 4-06).

4-01. MAINTENANCE AREA

A total of four (4) test borings, designated B287 through B290 were drilled in the maintenance area on the east side of the Plant 2 buildings. This area was previously noted to have elevated concentrations of oil and grease in the soils. Fill was encountered to depths ranging from 1.5 to 3.5 ft. and typically consisted of sandy gravel. Black staining in the fill and black stained cinders were noted in two of the four borings (B288 and B289).

4-02. PAVED FILL AREA

A total of 53 shallow test borings, designated B201 through B252 and B277, were drilled in the paved fill area at the north end of Plant 2. This area was observed in aerial photographs to possibly have received fill in the past. A grid pattern of boring locations was established in accordance with USEPA guidance for screening of unknown fill areas. The borings were laid out in an approximate 50 ft. x 50 ft. grid pattern in order to maximize coverage of the area. Borings were drilled to depths ranging from 2.5 to 8.0 ft. depending on encountered fill depth. Boring locations are shown on Figure 2.



Fill was encountered to depths ranging from 0 to 6.5 ft. (Table I). In two instances (B234 and B242), the bottom of the exploration was at 5.0 ft. and the base of the fill had not yet been encountered. Fill thicknesses in nearby test borings ranged from 0.5 to 7.8 ft. The average fill thickness encountered in the paved fill area was 3.1 ft. The ground surface typically consisted of a concrete and/or blacktop surface with gravel sub-base. Below the paved surface, fill was variable in composition, including silt, sand and gravel, cinders, wood fragments, glass and ash.

4-03. UNPAVED FILL AREA

A total of three (3) test borings and two (2) test pit trenches were excavated in the unpaved fill area north of Plant 2 (Figure 2). (This is in addition to 18 test pits conducted in this area in the initial investigation). The additional explorations were conducted to further evaluate the fill with high TCLP lead and PCBs encountered in the initial investigations by H&A. The test pit trenches were designated TP201 and TP202 (Appendix B); the borings, designated B278, B279 and B292, were converted to observation wells (Appendices A and C).

TP201 and TP202 were 35 and 20 ft. in length, respectively. They were excavated in a north-south direction in an effort to locate a former ditch that crossed this area observed in aerial photographs. In TP201 a dark brown organic silt at 2.5 ft. depth was observed near the southern end of the trench. This material may represent sediment from the base of the former ditch prior to fill activity.

Fill was encountered to depths ranging from 2.0 to 3.0 ft. The fill material typically consisted of sandy silt, with gravel, wood and metal fragments, ash and brick pieces. Native materials underlying the fill consisted of lacustrine silts and sands.

4-04. BAGHOUSE/SCRAP STORAGE AREA

A total of 24 shallow test borings, designated B253 through B276, were drilled in the paved area used for scrap storage and hazardous waste storage, east and northeast of Plant 2 buildings (Figure 2). This area was also observed in site photographs to be disturbed and may have received some fill. A 50 ft. x 50 ft. grid pattern was established for the boring locations. Due to physical obstructions, the grid was altered slightly toward the southern end of the grid.

Fill was encountered to depths ranging from 0 to 7.8 ft. Fill was not encountered beneath the pavement in six (6) of the test borings. The average fill thickness encountered was 2.1 feet. Concrete pad or blacktop surface with a gravel sub-base was typically encountered at the ground surface. Below the paved surface, fill typically consisted of a sandy silt with gravel.

4-05. NATIVE SOILS

Three (3) test borings were placed in native soils at the north end of the unpaved fill area. The borings, designated B280, B291 and B293, were converted to groundwater monitoring wells to evaluate water quality north of the fill area.

4-06. WELL INSTALLATION

4.6.1 Well Installation

Wells were installed in the boreholes of test borings B273, B277, B278, B279, B280, B281, B286, B287, and B290 through B293. Wells are designated by the test boring number plus the suffix -OW. Well installation reports and the accompanying groundwater level monitoring report are contained in Appendix C.

In order to construct each well a 2.0 inch diameter Schedule 40 PVC screen (slotted 0.010 in.) and riser pipe were installed in the borehole. Quartz sand was placed in the annular space between the pipe and the side of the borehole to a distance of 0.2 to 2.5 ft. above the top of the well screen.

A bentonite pellet seal was placed above the sand pack and cement grout was placed in the well annulus throughout the remaining distance to the ground surface. For wells with a flush mounted casing, a quartz sand layer was placed between the top of the bentonite seal and the base of the concrete surface seal to aid in dispersing surface runoff that may collect in the protective casing.

A locking steel protective casing was placed over the completed well, except for flush-mounted wells which were equipped with a locking cap on the PVC riser.

4.6.2 Well Development

Wells were developed by Parratt Wolff Drilling for a minimum of one hour or until measurements on a portable nephelometric turbidity meter were 50 Nephelometric Turbidity Units (NTUs) or less for groundwater. Wells B278-OW and B279-OW were re-developed on 24 January 1991. These wells were resampled in January along with the sampling of B291-OW, B292-OW and B293-OW.



4.6.3 Groundwater Potentiometric Levels

The groundwater wells installed on site provide data as to the groundwater flow direction through measurements of the groundwater potentiometric levels. Groundwater level measurements were obtained from the twelve wells installed on-site. An electronic depth indicator sounder was used to collect measurements of the groundwater surface in the well to the nearest 0.05 ft. from the top of the PVC or top of the steel protective casing at the well. The date, time and measurements were recorded in a field log and the data transferred to the Groundwater Monitoring Reports (Appendix C).

Nine wells were surveyed by Survey Systems of Syracuse, New York, on 21 November 1990. B291-OW, B292-OW and B293-OW, installed subsequent to the other nine wells, were surveyed by Survey Systems on 7 February 1991. Surveyed elevation results were referenced to the National Geodetic Vertical Datum (NGVD) elevation and reported to an accuracy of 0.01 ft. The groundwater elevations were used to generate the potentiometric surface map presented in Figure 3.

The groundwater flow is generally in a northeasterly direction to apparent discharge points along the surface water drainage channel located at the east boundary of the property, and to the south branch of Ley Creek, north of the site.

Based on observations of water accumulating in test pits, and the fine-grained nature of fill and native soils encountered, it is likely that the fill and immediately underlying soils would exhibit low hydraulic conductivity.

Results of the groundwater analyses conducted on site are discussed in Sections 5-05, 5-06, and 5-07.

V. CHEMICAL ANALYSES

5-01. SAMPLE LOCATIONS, COLLECTION AND HANDLING

Sample locations are shown on Figure 2. Summaries of the test boring, test pit and environmental sampling are presented in Tables I and II.

In the two grid areas (the paved fill area and the baghouse/scrap storage area), approximately 63 percent of the borings were randomly pre-selected using random number generation to identify the borings which would be sampled for lab analyses. Random selection by this method is recommended USEPA procedure for screening uncontrolled fill areas, as it prevents bias in the sample selection process (13).

5.1.1 Soil and Sediment Sampling

Samples were collected continuously in each boring. Test borings were advanced using 4-1/4 inc. I.D. hollow stem augers in accordance with ASTM method D1586-84. Samples were described using the Modified United Soil Classification System. Soil samples were collected from the split spoon after drilling to the desired sampling depth. The split spoon was decontaminated between each sample point using analconox wash, deionized water rinse, methanol wipe and final deionized water rinse.

Sediment samples were collected from three storm sewer manholes along the western property line. Samples were collected by lowering a stainless steel cup mounted on a pole into the sediment. The stainless steel cup was decontaminated between sampling points, as described above.

Surface samples of native soils were collected from two locations within the wooded area north of Plant 2. A shovel was used to excavate below a 4± inch layer of organic topsoil and a stainless steel spoon to collect the soil sample. Both the shovel and the stainless steel spoon were decontaminated between sampling locations, as described above.

Soil samples from test pit trenches were obtained from the sides of the excavation at the desired depth using a stainless steel spoon. The stainless steel spoon was decontaminated between sampling points as described above.

Samples were mixed thoroughly in a stainless steel bowl in order to homogenize sample splits submitted for analyses. The bowl and spoon used for mixing were decontaminated between samples. Soil/sediment samples were analyzed for total lead, TCLP lead and PCBs. Subsets of the samples were also analyzed for Total Organic Carbon and cation exchange capacity to evaluate possible correlation of these factors with high leachable lead levels.

5.1.2 Groundwater Sampling

Sampling of groundwater from the observation wells was conducted on 9 November 1990, and 24 and 25 January 1991 by H&A of New York personnel. Wells were purged using disposable bailers and water levels were recorded prior to purging. A minimum of four well volumes were removed from each of the wells.

Groundwater was sampled for PCBs (by EPA Method 8080) and five metals (aluminum, calcium, iron, potassium and lead), including both field filtered (soluble) and non-filtered (total) samples. Equipment used to filter the samples in the field include a peristaltic pump, disposable 0.45 micron filters, and disposable tubing.

5.1.3 Sampling Handling

A chain-of-custody form was completed following sample collection and copies are included in Appendix D with the laboratory data.

Exterior surfaces of sample jars and bottles were wiped clean with paper towels after sample collection, and glass containers were wrapped in "bubble" wrap to prevent breakage. Samples were shipped to the analytical laboratory under chain-of-custody in coolers containing ice in sealed plastic bags to maintain a 4°C sample storage temperature.

5-02. QA/QC PROCEDURES

Quality assurance/quality control (QA/QC) measures were followed for field collection and laboratory analyses of samples obtained at the site.

For soils, two field blind-duplicate samples were collected for the paved fill area and for the baghouse scrap storage area.

Field duplicate sample analytical results are presented in Table III with the site analytical results. Sample duplicates for soils are as follows:

- o paved/fill area - B201 and B210
- o baghouse/scrap storage area - B253 and B263

For groundwater field duplicate samples are as follows:

- o November 1990 sampling event: B277-OW
- o January 1991 sampling event: B279-OW

Field cleaning blanks (rinsate blanks) were collected using the same handling techniques as other samples. Deionized water, supplied by General Testing Corp., was poured over the sampling implement following decontamination. Field blanks are used to assess the potential introduction of contamination during sample collection and analyses.

5-03. LABORATORY CHEMICAL ANALYSES RESULTS

Soil, sediment and groundwater samples, as well as rinsate blanks, were submitted to General Testing Corporation for laboratory analyses. A summary of laboratory analytical results for the 58 soil/fill samples is presented in Table III. The analytical results and chain-of-custody records are presented in Appendix D. Soil/fill samples were analyzed for total lead, TCLP lead and PCBs (by EPA Method 8080). Selected samples were submitted for lead isotopic analyses to evaluate potential lead sources (see Section 5-04). In addition, total organic carbon (TOC) and cation exchange capacity (CEC) analyses were performed on subsets of the soil samples. A discussion of the TOC and CEC results may be found in Section 6-01.

Concentration criteria were selected to allow comparison of detected lead and PCB values at various sample locations. Such criteria were identified as follows:

- o Lead - the USEPA has established a concentration of 5 ppm or greater lead present in leachate from the Toxicity Characteristic Leaching Procedure (TCLP) analysis as the basis for determining characteristically hazardous lead waste (greater than or equal to 5 ppm) from non-hazardous (less than 5 ppm).
- o The EPA has not currently established a total lead standard for soil, however, an action level of 500 ppm has been reported at cleanup sites under review by NYSDEC (14). A 1000 ppm action level has been reported at Superfund sites, in EPA's biogenetic model, in Center for Disease Control

policy and by the State of Minnesota (temporary standard) (4). To be conservative and in line with potential NYSDEC requirements, the 500 ppm concentration was used as a comparison criteria.

- o PCBs - the USEPA has established a range of total PCB concentrations, based primarily on land use and potential for human exposure as a basis for comparing PCB data. Concentrations less than 10 ppm total PCB are generally considered acceptable at most locations. A range between 10 and 25 ppm is considered acceptable depending on land use; 10 ppm is the comparison criteria where residential/commercial land use prevails and 25 ppm (or lower) is generally acceptable in industrial areas. Since the site is an industrial site and is surrounded by industrial use, Table III highlights sample values above 25 ppm.

5.3.1 Paved/Fill Area

In the paved area north of the Plant 2 buildings, 15 out of 37 samples had lead (total) concentrations higher than a 500 ppm comparison criteria used for this investigation (Table III). Locations of the materials where these values clustered were observed consisted of three general locations. The total lead concentrations are higher on the west side of the railroad spur near the Plant 2 building; at the north edge of the paved area; and along the east edge of the paved area and property line near the railroad tracks.

The TCLP lead concentrations in the paved area exceed the 5.0 ppm EPA regulatory level in 8 sample locations (Table III). Seven of these were also found to coincide with high lead concentration areas described above. Although the correlation between high lead (total) and high TCLP lead does not hold true for all samples tested, the high TCLP values were found to correspond with high lead areas just west of the railroad spur near the Plant 2 building; at the north edge of the paved area; along the east edge of the paved area; and at the west edge of the paved area.

B239 was sampled at two consecutive depths (1.0-3.0 ft. and 3.0-5.0 ft.). The analyses indicate a higher concentration with increasing depth for both total and TCLP lead. The composition of the material in the deeper sample was observed to contain cinders and wood fragments. Conversely, in borings where native soil was sampled and analyzed (B253, B254) relatively low lead concentrations and non-detect TCLP lead values were found.

Within the paved fill area, PCBs were detected in 35 out of 37 soil/fill samples (Table III). The PCBs detected were primarily Arochlors 1248 and 1254; four samples contained Arochlor 1232; and one sample contained Arochlor 1242. Of the samples analyzed, three had total PCB concentrations in excess of the 25 ppm regulatory criteria. Concentrations of those in exceedance of the criteria range from 31.2 ppm to 82.7 ppm. The higher levels of PCBs were detected primarily along the east side of the paved fill area near the eastern property boundary.

5.3.2 Baghouse/Scrap Storage Area

In the paved scrap storage area and near the hazardous waste storage along the west side of Plant 2, 2 out of 16 samples had concentrations in exceedance of 500 ppm (Table III). Only one sample (B264-S1) had high lead concentration (29,600 ppm) in the aluminum scrap storage yard. A layer of black ash was observed from 1.1 to 1.5 ft. in B264. Sample B274-S1 located near the hazardous waste storage area also had a high lead level (2,980 ppm). Fill in B274 was observed to consist of gravelly coarse to fine sand with wood fragments.

TCLP lead was reported as non-detect in 15 out of 16 samples from the paved area (Table III). B264-S1 had a TCLP lead concentration of 189 ppm. As indicated above, B264 also had a high total lead concentration. The composition of the soil matrix in B264 was observed to contain a layer of black ash from 1.1 to 1.5 ft.

PCBs were detected in 12 out of 18 samples analyzed in the baghouse/scrap storage area (Table III). Concentrations ranged from non-detect to 4.95 ppm, below the comparison criterion of 25 ppm for PCBs in soil. Arochlors 1248 and 1254 were detected in the samples.

5.3.3 LBS-3 Area

Four borings (B282 through B285) were drilled and sampled in the vicinity of the LBS-3 sample location, adjacent to the lead baghouses on the west side of the fenceline (Figure 2). High lead (total) and TCLP lead were found in the four samples collected and analyzed. Total lead concentrations range from 1530 to 23,740 ppm (Table III). TCLP lead concentrations range from 12.2 to 22.7 ppm. Samples from this area were observed to consist of a sandy silt with little to trace gravel and trace organic material.

VIII. CONCLUSIONS AND RECOMMENDATIONS

Based on the scope of work performed for this investigation, the following conclusions and recommendations with respect to potential occurrence of oil and hazardous materials at this site have been made.

Paved and Unpaved Fill Area: Two primary areas were identified on site with high total lead (>500 ppm) and/or high TCLP lead (>5.0 ppm) concentrations in the soil/fill materials and in sediments in the outfall ditches 001 and 002. PCBs were also detected in one of these areas. In addition, spotty occurrences of high total and/or TCLP lead exist around the fill area northwest of Plant 2. An estimate of the soil/fill and sediment contained in these areas indicates 19,500 tons of material may be affected. Based on the investigation conducted to date, the lead and PCBs have not migrated to groundwater or off site; site access is restricted; and the lead and PCBs appear to be primarily contained within the soil/fill material. Further, it is likely that the fill and immediately underlying soils would exhibit low hydraulic conductivity. Therefore, there is not an immediate need for remedial action at the site. At your request, H&A conducted a preliminary review of six potential remedial alternatives to address the lead and PCBs if and when Roth elects to undertake remedial action. The alternatives reviewed include the no-action alternative, silicate stabilization, in-situ solidification, capping in-place, removal and off-site disposal and in-situ vitrification. Based on a review of the six remedial alternatives, H&A recommends the capping-in-place, at such time as Roth Bros. elects to proceed with a remedial action. This alternative is considered reliable technology and will effectively seal off the contamination, thereby minimizing the likelihood of migration of the compounds of concern. Through isolation, the toxicity of the affected soils is reduced. Additionally, the capping-in-place alternative is the most cost effective measure for remediation.

Baghouse/Scrap Storage Area: Based upon a review of surface sampling and sediment sampling on the Plant 2 property, it appears lead dusts from current operations are present on the paved surface area as well as in the surface water drainage system located along the western property boundary. H&A recommends the current housekeeping practices, including storage/handling baghouse dusts, be reviewed and revised to prevent accumulation and runoff of dusts and debris from these areas. In addition, the paved areas should be cleaned and waste material derived from the cleaning be handled accordingly. Sediments which have collected in the underground drainage pipe along the western boundary should also be flushed out, collected and properly disposed. H&A recommends confirmation sampling of

the paved area and the drainage pipe be conducted following the cleanup actions. It may be possible to incorporate the treatment of the sediments collected during cleaning of this area into remediation of the soil/fill.

Maintenance Area: Two observation wells were installed in the maintenance area to evaluate groundwater for the potential presence of free and dissolved petroleum hydrocarbons.

Petroleum hydrocarbons were detected in one of the wells at 4.52 ppm by the infrared method, however, they were not detected above the laboratory detection method by the gas chromatograph method. No free product petroleum was observed. Based on the single low concentration detected and the observations made, it does not appear the petroleum hydrocarbons are significantly affecting groundwater at the location sampled. No further investigation or action is recommended.

H&A's prior investigation had noted petroleum straining as present in some soils exposed in test pits in the maintenance area. It is H&A's understanding that unless such soils need to be excavated and handled for site construction or other purposes, they may remain in place under current NYSDEC policy. If however they are excavated they may need to be handled as a special solid waste. We recommend Roth be cognizant of this in planning work/construction in the Maintenance Area.

Regarding groundwater conditions, twelve groundwater observation wells were installed across the site, and groundwater samples collected and analyzed. Based on the observed groundwater flow direction and analyses of groundwater collected downgradient from the affected soil/fill areas, it does not appear the groundwater will require remedial action. Based on the groundwater flow direction and results of analyses conducted for on-site groundwater, it appears unlikely there would be offsite migration of metals in the groundwater.

IX. CLOSING

9-01. LIMITATIONS

The conclusions provided by H&A of New York are based solely on the work conducted and sources of information referenced in this report. Any additional information that becomes available concerning this site should be provided to H&A of New York so that our conclusions may be revised and modified as necessary.

The work performed by H&A of New York is subject to the terms and conditions of our Agreement with NHDD. Finally, this work has been undertaken in accordance with generally accepted consulting practices, including the specific USEPA guidelines and ASTM methods referenced in this report. No other warranty, express or implied, is made.

9-02. CONSULTANT'S STATEMENT

I state that I have personally examined and am familiar with the information submitted in Sections 1 and 2 of this Final Report. Based upon my own knowledge and upon my inquiry of those individuals responsible for obtaining the information presented, the foregoing information is true, accurate and complete based upon the scope of work performed, as described in the Agreement between H&A of New York and NHDD. I am aware that this information is being requested for the purpose of determining compliance with local, state or federal laws and may be submitted to appropriate governmental regulatory agencies for those purposes. I am aware that there are significant penalties for submitting false information to such agencies, including the possibility of fine and imprisonment.



Elizabeth D. Henderson
Staff Env. Geologist



Vincent B. Dick
Senior Env. Geologist



Lawrence P. Smith, P.E.
Partner

EDH:VBD:LPS:slf
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REFERENCES

1. H&A of New York personal communication with Mr. Neal Schwartz, General Manager, Roth Bros., 20 August 1990.
2. H&A of New York review of photographs from Roth Bros. Smelting Corp. offices, 23 August 1990.
3. "The Roth Report", Roth Bros. Smelting Corp., Fall 1987.
4. Lead Contaminated Soil Cleanup Draft Report, Ciriello, P.L., and T. Goldberg, USEPA Region I, 27 March 1987 in:
5. The Nature and Extent of Lead Poisoning in Children in the United States: A Report to Congress, Agency for Toxic Substances and Disease Registry, U.S. Dept. of Health and Human Services, July 1988.
6. "Rates and Routes of Transport of PCBs in the Environment," Nisbet, Ian and A.F. Sarofim, in: Environmental Health Perspectives, #1, pg. 21-38.
7. "The Merck Index", Tenth Edition, Windholz, Martha, Ed., Merck & Co., Inc., 1983.
8. "Handbook of Non-Point Pollution," Novotny, Vladimir and G. Chesters, Van Nostrand Reinhold Company, 1981.
9. "Chemical Fixation and Solidification of Hazardous Wastes", Conner, Jesse, Van Nostrand Reinhold Co., 1990.
10. H&A of New York telephone conversation with Neal Schwartz, Roth Bros. Smelting Corp., 5 October 1990.
11. "Groundwater and Wells", Second edition, Driscoll, Fletcher G., Johnson Division, 1986.
12. "Soils and Geomorphology", Birkeland, Peter, Oxford University Press, 1984.
13. "Data Quality Objectives for Remedial Response Activities - Development Process", USEPA/540/G-87/003, March 1987.
14. H&A of New York telephone conversation with Mr. Robert Hall, Bureau of Western Remedial Action, Division of Hazardous Waste Remediation, NYSDEC, 1 March 1991.

REFERENCES
(Cont'd)

15. H&A of New York personal communication with Mr. Frank Myer, Plant Engineer, Roth Bros., 21 August 1990.
16. H&A of New York meeting with Neal Schwartz, General Manager, Roth Bros., 11 January 1991.
17. "PCBs and Superfund - New EPA Cleanup Guidance Mixes Containment, Treatment", Superfund Report, 12 September 1990.
18. "Technology Screening Guide for Treatment of CERCLA Soils and Sludges", USEPA, 540/2-88/004, September 1988.
19. "Isotopic Study of Galenas from the Upper Mississippi Valley, the Illinois-Kentucky, and some Appalachian Valley Mineral Districts", Heyl, A.V., et al., Economic Geology, V. 61, 1966, p. 933-961.
20. "Isotopic Evidence for the Origin of Mississippi Valley-Type Mineral Deposits: A Review", Heyl, A.V. et al., Economic Geology, V. 69, 1974, p. 992-1006.
21. "The Condensed Chemical Dictionary", ninth edition, Hawley, Gessner G., Van Nostrand Reinhold Co., 1977.
22. "Code of Federal Regulations: Protection of Environment, 40, Parts 190 to 399", Office of Federal Register, 1 July 1987.
23. "Means Site Work Cost Data 1991", R.S. Means Co., Inc., 1990.
24. "Soils and Geomorphology", Peter W. Birkeland, Oxford University Press, 1984.



TABLE I
ROTH BROS. SMELTING CORP.
SUMMARY OF SAMPLE COLLECTION
(Page 1 of 2)

LOCATION	EXPLORATION NUMBER	FILL DEPTH (FT.)	SOIL SAMPLE	DUPLICATE	METALS, PCBs ANALYSES	LEAD ISOTOPE	TOTAL ORG. CARBON	CATION EXCH CAPACITY
PAVED FILL AREA	B201	0-3.0	X	X	X			
	B202	0-3.4	X		X			
	B203	0-3.2						
	B204	0-3.3						
	B205	0-4.1	X		X			
	B206	0-3.1	X		X			
	B207	0-3.0						
	B208	NE						
	B209	0-3.5	X		X			
	B210	0-3.0	X	X	X			
	B211	0-2.0						
	B212	0-3.1	X		X			
	B213	0-2.5	X		X			
	B214	0-2.8	X		X			
	B215	0-2.8	X		X	X	X	X
	B216	0-3.0	X		X			
	B217	0-2.5	X		X	X	X	X
	B218	0-3.5	X		X			
	B219	0-2.0	X		X			
	B220	0-2.7	X		X	X		
	B221	0-2.3	X		X			
	B222	0-2.1						
	B223	0-2.7	X		X			
	B224	0-3.0						
	B225	0-3.0	X		X			
	B226	0-2.5	X		X			
	B227	NE						
	B228	0-1.2	X		X	X	X	X
	B229	0-3.5	X		X			
	B230	0-3.0						
	B231	0-3.3	X		X			
	B232	0-2.8						
	B233	0-2.7	X		X			
	B234	0-5.0**	X		X			
	B235	0-4.4						
	B236	0-2.4						
	B237	0-4.8	X		X			
	B238	0-3.2	X		X			
	B239	0-5.1	X		X			
	B240	NE						
	B241	0-6.0	X		X			
	B242	0-5.0**						
	B243	0-5.2	X		X			
	B244	0-6.0						
	B245	0-3.5	X		X			
	B246	0-4.3	X		X			
	B247	0-3.5	X		X			
	B248	0-2.0						
	B249	0-2.0						
	B250	0-2.5	X		X			
	B251	0-3.0	X		X			
	B252	0-6.5	X		X			
	B277-CW	0-0.5						

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H & A OF NEW YORK
ROCHESTER, NEW YORK

FOIL204304

TABLE I
ROTH BROS. SMELTING CORP.
SUMMARY OF SAMPLE COLLECTION
(Page 2 of 2)

LOCATION	BORING NUMBER	FILL DEPTH (FT.)	SOIL SAMPLE	DUPLICATE	METALS, PCBs ANALYSES	LEAD ISOTOPE	TOTAL ORG. CARBON	CATION EXCH. CAPACITY
BAGHOUSE AREA	B253	NE	X	X	X			
	B254	NE	X		X			
	B255	NE						
	B256	0-7.8						
	B257	NE						
	B258	0-2.3						
	B259	0-3.0						
	B260	0-2.0	X		X			
	B261	0-2.0						
	B262	0-2.1						
	B263	0-1.5	X	X	X			
	B264	0-1.9	X		X			X
	B265	0-2.3	X		X			
	B266	0-1.3	X		X			X
	B267	NE						
	B268	0-3.0	X		X			
	B269	0-2.4	X		X			
	B270	NE						
	B271	0-3.0						
	B272	0-2.8	X		X			
	B273-OW	0-5.3	X		X			
	B274	0-1.8						
	B275	0-2.5	X		X			
	B276	0-3.3	X		X			
FILL AREA	B278-OW	0-3.0	X		X			
	B279-OW	0-2.0						
	B280-OW	0-1.0						
SOUTHWEST END OF PLANT 2	B281-OW	0-2.2						
LBS-3 AREA	B282	0-2.0**	X		X		X	X
	B283	0-2.0**	X		X			
	B284	0-2.0**	X		X		X	X
	B285	0-4.2**	X		X			
NEAR OUTFALL 001	B286-OW	0-0.5						
MAINTENANCE AREA	B287-OW	NE						
	B288	NE						
	B289	0-3.5						
	B290-OW	0-2.3						
TRENCHES IN FILL AREA	TP201	0-1.5	X		X		X	X
	TP202	0-3.5	X		X		X	X
STORM SEWER DISCHARGE *	SDS-1-6		X		X		X	
	SDS-1-7		X		X		X	
	SDS-1-8		X		X		X	

NOTES:

1. -OW indicates observation well installed in completed borehole.
2. See Appendix A for Test Boring Reports.
3. See Tables III and IV for summary of laboratory analytical results.
4. * Indicates sample collected from storm sewer manholes.
5. NE = Fill was not encountered in the exploration.
6. ** Indicates bottom of fill was not encountered during exploration.

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H & A OF NEW YORK
ROCHESTER, NEW YORK

FOIL204305

TABLE II
ROTH BROS. SMELTING CORP.
LEAD ISOTOPE SAMPLE SUMMARY

LOCATION	SAMPLE NUMBER	LEAD CONCENTRATION	REMARKS
PAVED FILL AREA	B215	6220 PPM	ORIGINAL SAMPLE, pH 8.7
	B215	7.88 PPM	LEACHATE, pH<2
	B217	33.4 PPM	ORIGINAL SAMPLE, pH 9.4
	B217	ND	LEACHATE, pH<2
	B220	3740 PPM	ORIGINAL SAMPLE, pH 9.3
	B220	0.79 PPM	LEACHATE, pH<2
	B228	10300 PPM	ORIGINAL SAMPLE, pH 9.5
	B228	29.2 PPM	LEACHATE, pH<2
NATIVE SOIL	NGB-1	6 PPM	ORIGINAL SAMPLE
	NGB-2	15 PPM	ORIGINAL SAMPLE
LEAD DUST COMPOSITE	LDC-1	approx. 20%	LEAD DUST COLLECTED FROM HAZ. WASTE STORAGE BINS IN BAGHOUSE ALONG WEST PROPERTY BOUNDARY.
STACK SAMPLE	STACK #1	NAV	STACK SAMPLES WERE COLLECTED BY UPSTATE LABORATORY ON GLASS FIBER FILTERS WITH A 99.98% COLLECTION EFFICIENCY DOWN TO PARTICLE SIZE OF 0.3 MICRONS.
	STACK #2	NAV	
	STACK #3	NAV	
	STACK #4	NAV	
	STACK #5	NAV	
	FILTER BLANK	NAV	BLANK FOR QUALITY CONTROL

NOTES:

1. NAV = Data not available.
2. PPM = Part per million.
3. See Table V for lead isotopic analyses data; see Figure 5 for plot of data.

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FOIL204306

TABLE III
ROTH BROS. SMELTING CORP.
PLANT 2

SUMMARY OF LABORATORY ANALYTICAL DATA
SOIL/FILL SAMPLES

(Page 1 of 2)

LOCATION	SAMPLE NO.	DEPTH IN FEET	LEAD TOTAL	LEAD TCLP	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB TOTAL	pH VALUE	TOC	CEC
PAVED FILL AREA	B201-S1A	0.9-2.9	105	0.372	ND	ND	16.4	ND	ND	16.4	8.2		
NORTH OF PLANT 2	B201-S1B	0.9-2.9	58.2	0.461	ND	ND	23.9	ND	ND	23.9	7.4		
	B202-S1	1.0-3.0	575	1.49	ND	ND	82.7	ND	ND	82.7	9.2		
	B205-S1	1.0-3.0	131	0.226	ND	ND	13.5	ND	ND	13.5	8.3		
	B206-S1	1.0-3.0	2240	ND	ND	ND	20.6	ND	ND	20.6	8.9		
	B209-S1	1.0-3.0	302	0.383	ND	ND	1.4	ND	ND	1.40	9.0		
	B210-S1A	1.5-3.5	557	2.38	ND	ND	ND	3.70	ND	3.70	5.8		
	B210-S1B	1.5-3.5	6940	2.48	ND	ND	ND	3.73	ND	3.73	8.9		
	B212-S1	1.0-3.0	5.90	ND	ND	ND	0.025	ND	ND	0.025	9.5		
	B213-S1	1.0-3.0	35.3	ND	ND	ND	0.026	0.148	ND	0.172	8.7		
	B214-S1	1.0-3.0	231	ND	ND	ND	0.071	0.131	ND	0.202	8.9		
	B215-S1	1.0-3.0	6220	7.88	ND	0.550	ND	0.760	ND	1.31	8.7	1.47	4.14
	B216-S1	1.0-3.0	366	2.92	4.23	ND	ND	1.44	ND	5.67	8.4		
	B217-S1	1.0-3.0	33.4	ND	ND	ND	0.238	ND	ND	0.238	9.4	2.33	18.1
	B218-S1	1.0-3.0	124	4.54	ND	ND	1.89	1.53	ND	3.42	8.25		
	B219-S1	1.0-3.0	2370	7.52	ND	ND	ND	60.3	ND	60.3	9.0		
	B220-S1	1.0-3.0	3740	0.790	ND	ND	15.2	16	ND	31.2	9.3		
	B221-S1	1.0-3.0	98.9	ND	ND	ND	ND	ND	ND	0	8.9		
	B223-S1	1.0-3.0	56.7	ND	ND	ND	16.5	ND	ND	16.5	8.9		
	B225-S1	1.0-3.0	9730	ND	3.64	ND	ND	2.37	ND	6.01	9.0		
	B226-S1	1.0-3.0	314	2.11	ND	ND	0.738	1.10	ND	1.84	8.7		
	B228-S1	1.5-2.5	10300	29.2	ND	ND	0.362	0.671	ND	1.03	9.5	1.43	12.3
	B229-S1	1.0-3.0	156	0.730	ND	ND	7.35	1.05	ND	8.40	10.1		
	B231-S1	1.0-3.0	29.9	0.195	ND	ND	0.580	0.070	ND	0.650	10.0		
	B233-S1	1.0-3.0	250	1.13	2.38	ND	ND	1.81	ND	4.19	8.7		
	B234-S1	1.0-3.0	64.3	11.0	0.236	ND	ND	0.030	ND	0.268	7.9		
	B237-S1	1.0-3.0	196	ND	ND	ND	0.512	0.648	ND	1.16	7.15		
	B238-S1	1.0-3.0	160	ND	ND	ND	1.28	0.369	ND	1.68	5.9		
	B239-S1	1.0-3.0	31.4	ND	ND	ND	ND	0.027	ND	0.027	5.4		
	B239-S2	3.0-5.0	1280	21.6	ND	ND	0.894	0.761	ND	1.66	7.2		
	B241-S1	0.5-2.5	ND	0.160	ND	ND	ND	ND	ND	0.0	8.75		
	B243-S1	1.0-3.0	40000	ND	ND	ND	0.904	ND	ND	0.904	8.95		
	B243-S2	3.0-5.0	56500	30.7	ND	ND	4.97	ND	ND	4.97	11.5		
	B245-S1	1.0-3.0	14700	ND	ND	ND	1.05	ND	ND	1.05	10.4		
	B250-S1	0.0-2.0	15000	28.0	ND	ND	1.32	3.82	ND	5.14	9.55		
	B251-S1	0.0-2.0	3570	28.0	ND	ND	6.00	3.53	ND	9.63	9.2		
	B252-S1	0.0-2.0	147	ND	ND	ND	19.8	ND	ND	19.3	11.5		
COMPARISON CRITERIA (2)			500	5.00							25		

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ROCHESTER, NEW YORK

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TABLE III
ROTH BROS. SMELTING CORP.
PLANT 2

SUMMARY OF LABORATORY ANALYTICAL DATA
SOIL/FILL SAMPLES

(page 2 of 2)

LOCATION	SAMPLE NO.	DEPTH IN FEET	LEAD TOTAL	LEAD TCLP	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB TOTAL	pH VALUE	TOC	CEC
BAGHOUSE/SCRAP STORAGE AREA	B253-S1	1.0-3.0	34.8	ND	ND	ND	ND	ND	ND	0.0	10.4		
	B254-S1	1.0-3.0	16.0	ND	ND	ND	ND	ND	ND	0.0	10.1		
	B254-S2	3.0-5.0	ND	ND	ND	ND	ND	ND	ND	0.0	8.5		
	B260-S1A	1.0-3.0	44.8	ND	ND	ND	ND	0.980	ND	0.0	7.0		
	B260-S1B	1.0-3.0	33.0	ND	ND	ND	ND	0.076	ND	.980	6.8		
	B263-S1A	1.0-3.0	17.7	ND	ND	ND	0.021	0.285	ND	.078	8.7		
	B263-S1B	1.0-3.0	63.2	ND	ND	ND	ND	ND	ND	.308	8.8		
	B263-S2	3.0-5.0	ND	ND	ND	ND	0.711	0.691	ND	0.0	8.3		
	B264-S1	0.5-2.5	29600	189	ND	ND	0.380	0.593	ND	1.402	7.6		10.2
	B265-S1	0.5-2.5	ND	ND	ND	ND	ND	0.133	ND	.973	8.2		
	B266-S1	0.5-2.5	30.0	ND	ND	ND	ND	0.031	ND	.133	8.9		6.98
	B268-S1	0.5-2.5	64.0	ND	ND	ND	ND	4.95	ND	.031	8.65		
	B269-S1	0.5-2.5	ND	ND	ND	ND	ND	ND	ND	4.98	6.9		
	B272-S1	1.0-3.0	36.3	ND	ND	ND	ND	0.267	ND	0.0	8.6		
	B273-S1	1.0-3.0	33.0	ND	ND	ND	ND	0.552	ND	.267	7.05		
	B274-S1	1.0-3.0	2980	ND	ND	ND	ND	0.517	ND	.552	10.15		
	B275-S1	1.0-3.0	152	ND	ND	ND	ND	0.060	ND	.517	9.8		
	B276-S1	1.0-3.0	350	ND	ND	ND	ND	ND	ND	.060	8.4		
FILL AREA	B278-S1	0-2.0	752	5.05	ND	ND	72.3	ND	ND	72.3	7.6		8.79
	B278-S2	2.0-4.0	120	ND	ND	ND	27.7	ND	ND	27.7	8.55		
	B278-S3	4.0-6.0	ND	ND	ND	ND	0.067	ND	ND	.087	7.2		
	TP201-J1	1.5-2.5	563	4.35	ND	ND	29.4	ND	ND	29.4	10.35	1.40	4.25
	TP201-J2	2.5-3.0	42.0	ND	ND	ND	1.62	ND	ND	1.62	10.2	ND	3.35
	TP202-J1	2.5-3.0	348	5.40	ND	ND	164	ND	ND	164	8.9		
LBS-3 AREA	B282-S1	0-2.0	1850	12.2	ND	ND	7.13	ND	ND	7.13	8.15	1.37	6.00
	B283-S1	0-2.0	2650	22.7	ND	ND	3.19	ND	ND	3.19	8.2		
	B284-S1	0-2.0	1530	14.3	ND	ND	40.1	ND	ND	40.1	8.75	1.04	6.06
	B285-S1	0-4.0	3740	21.0	ND	ND	0.447	0.803	ND	1.25	7.95		
STORM SEWER DISCHARGE	SDS-1-6	0-0.3	26500	157	ND	ND	9.20	ND	1.72	10.92	8.9	2.15	
	SDS-1-7	0-0.3	35700	74.5	ND	ND	10.3	ND	1.65	11.95	8.7	7.23	
	SDS-1-8	0-0.3	41500	135	ND	ND	1.78	ND	2.80	4.58	7.55	11.5	
COMPARISON CRITERIA (2)			500	5.00						25			

NOTES:

1. Concentrations expressed in parts per million (ppm). See also note 7.
2. Concentrations which are outlined exceed comparison criteria.
Comparison criteria consist of: 1) Superfund Record of Decision: United Scrap Lead, OH (Sept. 1988); 1987)
2) EPA Regulatory Levels for Toxicity Characteristics Constituents; and 3) EPA 40 CFR Part 761 PCB Spill Cleanup Policy 1987.
3. ND indicates analyte not detected above laboratory detection limits.
4. TCLP: Toxicity Characteristic Leaching Procedure
5. TOC: Total Organic Carbon. Analyses performed on subset of 10 samples.
6. PCB Total: Sum total of PCBs detected.
7. CEC: Cation Exchange Capacity. Analyses only performed on subset of 10 samples. Concentrations expressed in milliequivalents per 100 grams (meq/100 g).

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FOIL204308

TABLE IV
ROTH BROS. SMELTING CORP.
PLANT 2SUMMARY OF LABORATORY ANALYTICAL DATA
GROUNDWATER SAMPLES

WELL NO.		B273-OW	D277-OW	B277-OW DUPLICATE	D276-OW NOV/JAN	D279-OW NOV/JAN	D279-OW DUPLICATE	D280-OW	D281-OW	D286-OW	D287-OW	D290-OW	D291-OW	D292-OW	D293-OW	WATER QUALITY CRITERIA		
																TOGS 1.1.1 CLASS 0A GW	6 NYCRR PART 703.5 GW STDS.	10 NYCRR PART 5 GW STDS.
ALUMINUM	TOTAL	7.48	1.85	40.1	211 / 8.32	8.30 / 7.30	16.7	24.8	4.20	0.70	1.47	17.0	27.1	5.70	17.7	NAV	NAV	NAV
	DISS.	NO	NO	NO	0.18 / 0.22	20.0 / 3.51	3.84	0.11	NO	NO	0.120	NO	NO	NO	NO	NAV	NAV	NAV
CALCIUM	TOTAL	447	177	187	100 / 34.2	44.0 / 22.9	25.0	172	197	355	426	371	177	88.2	123	NAV	NAV	NAV
	DISS.	428	93.0	ND	8.84 / 10.8	35.4 / 25.5	27.6	97.0	190	314	484	255	94.1	55.3	70.5	NAV	NAV	NAV
IRON	TOTAL	15.9	52.5	54.7	299 / 10.2	53.1 / 55.7	44.7	23.7	3.18	7.73	1.07	27.5	662	18.3	14.6	0.300 TS	0.300	0.300 (A)
	DISS.	0.165 JMI	NO JMI	0.151 JMI	0.575 JMI / 0.225	39.0 JMI / 8.75	9.40	ND JMI	NO JMI	ND JMI	ND JMI	0.825 JMI	0.076	0.109	ND	0.025 TS	0.025	0.050
POTASSIUM	TOTAL	19.5	12.0	13.9	47.0 / 8.45	14.1 / 4.36	7.19	9.80	5.52	15.8	5.15	12.4	9.97	6.44	5.41	NAV	NAV	NAV
	DISS.	9.11	15.5	1.45	1.46 / 2.94	5.04 / 4.13	5.00	0.296	3.54	10.9	5.47	4.47	1.71	2.32	3.10	NAV	NAV	NAV
LEAD	TOTAL	ND	ND	0.058	1.52 / 0.0477	0.204 / 0.293	0.212	ND	ND	ND	ND	0.839	0.0768	0.292	0.0268	0.025 TS	0.025	0.050
	DISS.	ND	ND	ND	ND / ND	0.117 / 0.0142	0.0197	ND	ND	ND	ND	ND	ND	ND	ND	0.025 TS	0.025	0.050
PCBs	ND	ND	ND	24.4 / ND	ND / ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0001 TS	0.0001	
	(Total)	(Total)	(Total)	(Total)(Diss.)	(Total)(Diss.)	(Diss.)	(Total)	(Total)	(Total)	(Total)	(Total)	(Total)	(Diss.)	(Diss.)	(Diss.)			
PET. HYDROCARBON (IR)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.52	NA	NA	NA			
PET. HYDROCARBON (GC)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA			
pH (After Devol., 1/29/91)	6.60	7.50	NA	8.5	7.9	NA	NA	7.2	7.3	7.2	7.2	7.8	8.2	7.5				
CONDUCTIVITY (1/29/91)	5700	1350	NA	3200	5100	NA	NA	2070	2660	2470	2100	1500	1900	1620				
TEMPERATURE (C - 1/24/91)	8.80	24.2	NA	20.6	14	NA	NA	23.7	22.9	17.3	12.3	NA	NA	NA				

NOTES:

- Concentrations expressed in parts per million (ppm).
- Concentrations which are outlined exceed water quality criteria.
- ND indicates analyte not detected above laboratory detection limits.
- TS = TOGS 1.1.1 Standard. See Note 7.
- (A) Total concentration of iron and manganese should not exceed 500 ug/l (0.500 ppm).
- NAV = Data not available.
- Water quality criteria references:
TOGS 1.1.1: NYSDOC Division of Water Technical and Operational Guidance Series (1.1.1),
"Ambient Water Quality Standards and Guidance Values, April 1, 1987, NYSDOC Memorandum,
NYCRR, Title 8, Chapter X, "Water Quality Regulations - Surface Water and Groundwater Classifications
and Standard", Part 703, Paragraph 703.5, NYSDOC, Revised March 31, 1988.
NYCRR, Title 10, Part 5, "Regulations for Drinking Water Supplies", NYSDOH.

- Total samples were not filtered and contained sediment. Dissolved (DISS.) samples were field filtered.
- JMI = Indicates an estimated value due to matrix spike and/or matrix spike duplicate outside control limits. Matrix interference suspected; repeat analysis still unacceptable.
- NA = Indicates sample not analyzed.
- pH and Conductivity analyzed on 20 January 1991 by H&A of New York personnel.
- * = Indicates well was sampled during two events. Data presented shows results from both events.

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TABLE V
ROTH BROS. SMELTING CORP.
PLANT 2

LEAD ISOTOPIC ANALYSES

Location	Sample	Pb Conc. (ppm)	208Pb/204Pb	% Std. Err.	207Pb/204Pb	% Std. Err.	206Pb/204Pb	% Std. Err.	206Pb/207Pb	% Std. Err.
PAVED FILL AREA	B215-S1 L	7.88	37.782	0.016	15.527	0.014	18.102	0.016	1.166	0.011
	B228-S1 L	29.2	38.504	0.022	15.650	0.045	19.236	0.019	1.123	0.049
	B217-S1 L	ND	38.110	0.082	15.571	0.080	18.511	0.092	1.189	0.021
	B220-S1 L	0.79	38.004	0.159	15.542	0.123	18.425	0.161	1.184	0.137
	B215-S1	6220	37.840	0.015	15.539	0.013	18.124	0.015	1.166	0.013
	B228-S1	10300	38.669	0.016	15.688	0.016	19.281	0.017	1.229	0.017
	B217-S1	33.4	37.993	0.008	15.553	0.007	18.274	0.007	1.175	0.007
	B220-S1	3740	38.034	0.184	15.545	0.127	18.385	0.161	1.177	0.200
STACK EMISSIONS	Stack #1	--	38.474	0.021	15.644	0.018	19.238	0.028	1.229	0.034
	Stack #2	--	38.623	0.033	15.667	0.014	19.369	0.026	1.238	0.023
	Stack #3	--	38.558	0.041	15.654	0.031	19.195	0.039	1.227	0.052
	Stack #4	--	38.371	0.006	15.623	0.007	19.022	0.008	1.218	0.006
	Stack #5	--	38.130	0.015	15.584	0.012	18.710	0.015	1.200	0.010
BAGHOUSE DUST	LDC-1	* 200000	38.360	0.016	15.638	0.009	19.054	0.022	1.218	0.017
NATIVE SOIL	NBG-1	6	38.058	0.083	15.531	0.064	18.640	0.109	1.200	0.124
	NBG-2	15	38.274	0.009	15.604	0.006	18.956	0.008	1.215	0.005

NOTES:

- Lead isotopic analyses was conducted by the Department of Geological Sciences, University of Rochester. Samples were provided to the University by H&A of New York.
- Lead concentrations shown in the third column are derived from TCLP and total lead analyses conducted by General Testing Corporation (GTC).
- * Lead concentration for LDC-1 (Baghouse Dust) is an approximation. The sample was not analyzed by GTC.
- L Indicates sample consists of leachate derived from the TCLP analyses.
- ND Indicates lead was not detected above laboratory detection limits.
- Indicates data not available.
- See Figure 5 for plot of data in this table.

edh170185-42h&a-lead

TABLE VI
ROTH BROS. - PLANT 2
ALTERNATIVE REMEDIAL TECHNOLOGIES
Page 2 of 2

METHOD NAME	DEVELOPER	SYNOPSIS OF METHOD	APPLICABILITY	REMARKS	ESTIMATED UNIT COST
In-Situ Vitrification	GeoSafe Corporation	Melt soil in place at 1600-2000 C, thereby creating a vitrified mass of soil.	Soils/sludges with organic and inorganic pollutants.	Volume reduced by 20-40%. Wastes immobilized into vitrified monolith with structural and environmental properties.	\$310-360/Ton
Encapsulation	--	Excavate soil and place on liner; cover with multi-layer low permeability cap to prevent infiltration.	Most wastes except non-polar organics	Isolation technology.	\$62/Ton

Note: This table presents an outline of potentially applicable technologies for site remediation. Further evaluation of these technologies and others would be necessary to determine the most appropriate technology for the Roth Bros. Plant 2 site.

gmaL60

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TABLE VII
VOLUME SUMMARY

<u>COMPOUNDS IN SOIL</u>	<u>VOLUME TOTALS</u>
1. Total lead + TCLP Lead + PCB	13,930 cy = 19,500 T*
2. TCLP Lead + PCB	3,700 cy = 5,185 T
3. Total Lead + TCLP lead	13,900 cy = 19,500 T
4. PCBs	1,220 cy = 1,700 T

Notes:

- * Assumes 1 cy = 1.4 T
- Volume summary is for estimating purposes only and may not reflect actual site conditions encountered.

COST ESTIMATES FOR SELECTED TECHNOLOGIES

METHOD	DISPOSAL/TREATMENT COSTS	TOTAL COST ESTIMATE**
1. Offsite Disposal	\$5.4 to \$7.1 million	\$7.0 to \$9.2 million
2. In-Situ Solidification	\$3.8 million	\$5.0 million
3. Silicate Stabilization	\$2.1 million	\$2.7 million
4. Capping In-Place	\$0.6 to \$0.8 million	\$0.8 to \$1.0 million
5. In-Situ Vitrification	\$6.1 to \$7.1 million	\$7.9 to 9.2 million
6. Encapsulation	\$1.1 million	\$1.4 million

Notes:

- ** Includes 30% for material excavation, handling, laboratory analyses and engineering. Additional costs may be incurred depending on specific regulatory program criteria under which remediation takes place.
- Disposal and treatment costs are estimates only based on literature reviewed. Actual costs will be determined based on pilot scale tests implementation, specifically for options 2, 3, and 5.
- Treatment costs reflect treatment for 19,500 Tons of soil/fill material and sediments containing high lead, high TCLP lead and PCBs.

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FILE NO. 70185-42

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FOIL204312

FILE NO. 70185-40



QUADRANGLE LOCATION
USGS QUADRANGLE: SYRACUSE
EAST, N.Y.



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ROTH BROS. SMELTING CORP.
SYRACUSE, NEW YORK

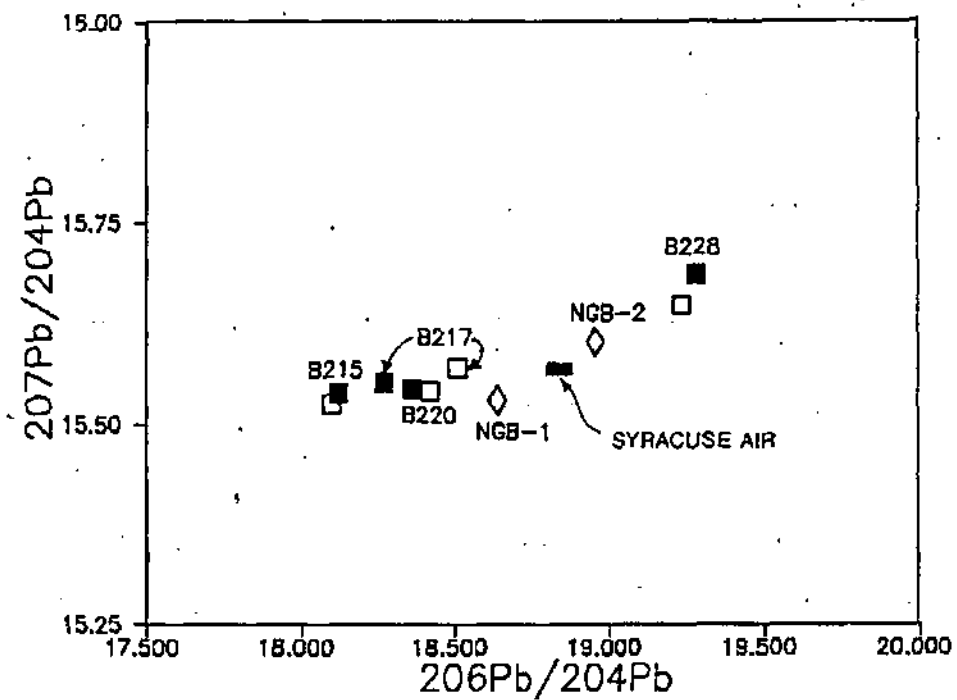
PROJECT LOCUS

SCALE: 1 IN. = 2000 FT.

MAY 1991

CHARRETTE

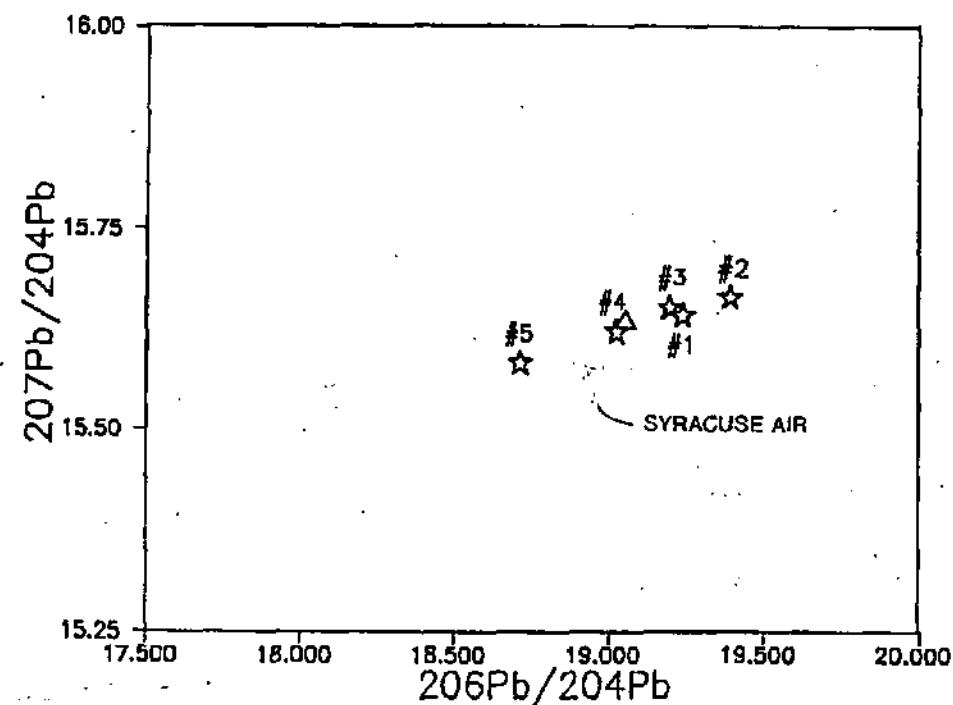
ROTH BROS. SMELTING CORP.
LEAD ISOTOPIC ANALYSES - FILL



NOTES:


1. SOLID SQUARE ■ REPRESENTS LEACHATE OF FILL MATERIALS. OPEN SQUARE □ REPRESENTS TOTAL LEAD.
2. ISOTOPIC ANALYSES PERFORMED BY DEPARTMENT OF GEOLOGICAL SCIENCES, UNIVERSITY OF ROCHESTER.
3. STACK EMISSION SAMPLES COLLECTED BY UPSTATE LABORATORIES.
4. SEE FIGURE 2 FOR EXPLORATION LOCATIONS.

ROTH BROS. SMELTING CORP.
LEAD ISOTOPIC ANALYSES - STACK & DUST



FILE NO. 70185-42

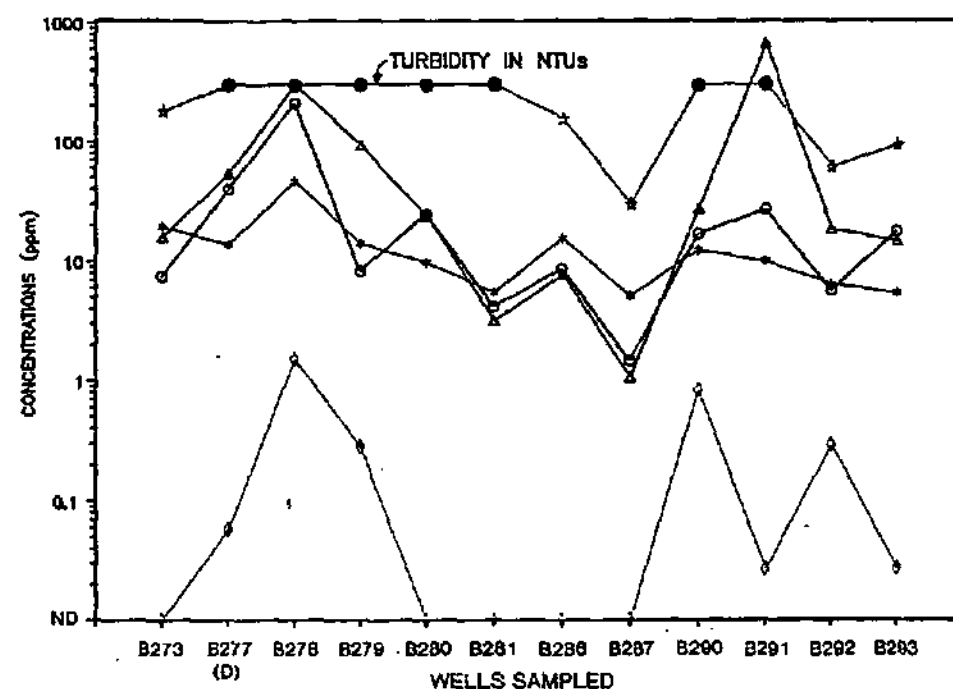
CHARRETTE

	H & A of New York Consulting Geotechnical Engineers, Geologists and Hydrogeologists
	ROTH BROS. SMELTING CORP. EAST SYRACUSE, NEW YORK
	LEAD ISOTOPIC DATA

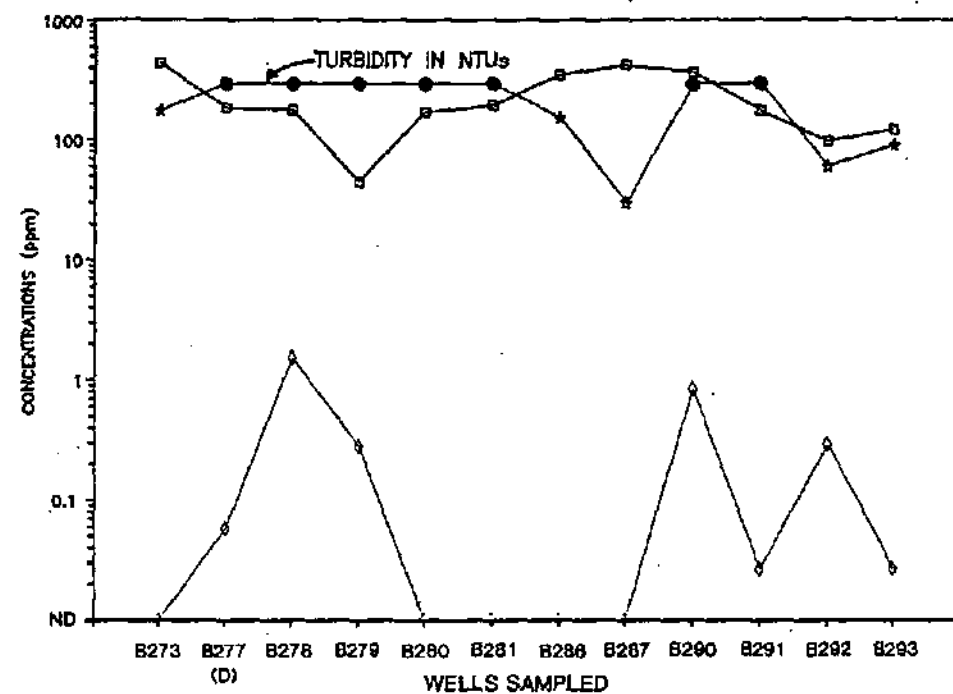
MAY 1991

FIGURE 4

GROUNDWATER QUALITY RESULTS TOTAL METALS - Al, Fe, K, Pb



GROUNDWATER QUALITY RESULTS TOTAL METALS - Ca, Pb



NOTES:

1. TURBIDITY VALUES WERE MEASURED UP TO A 200 NEPHELOMETRIC TURBIDITY UNIT (NTU) CEILING. SEVERAL WELLS HAD NTU VALUES HIGHER THAN THE 200 NTU LIMIT, THEREFORE THE PEAKS MAY BE MORE PRONOUNCED THAN WHAT IS INDICATED.
2. CONCENTRATIONS OF LEAD INDICATED BY ◆◆◆◆ SYMBOL ARE NON-DETECT FOR B273-OW, B280-OW, B281-OW, B286-OW AND B287-OW.
3. (D) = DUPLICATE SAMPLE COLLECTED FOR B227.
4. ND = ANALYTE NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
5. ALUMINUM, POTASSIUM AND IRON GENERALLY BEHAVE UNIFORMLY AS A GROUP. THE LEAD ALSO TENDS TO BEHAVE SIMILARLY TO THE ALUMINUM, POTASSIUM AND IRON.
6. THE MAJOR CATION CALCIUM GENERALLY BEHAVES INDEPENDENTLY OF THE TURBIDITY CONCENTRATIONS.

FILE NO. 70185-42

CHAPETTE

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ROTH BROS. SMELTING CORP.
EAST SYRACUSE, NEW YORK

GROUNDWATER QUALITY RESULTS
TOTAL METALS

MAY 1991

FIGURE 5

FILE NO. 70185-42

CHARRETTE

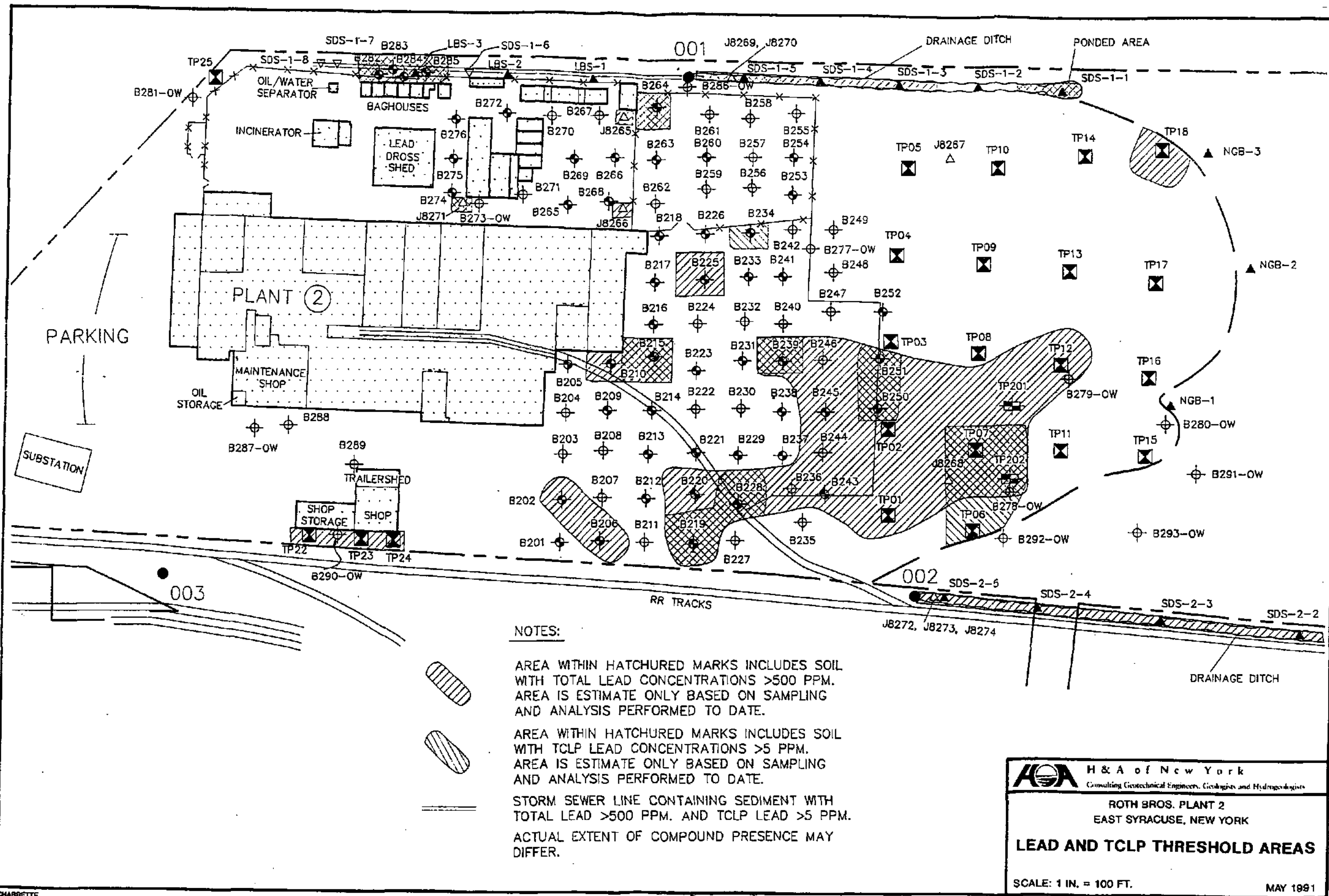
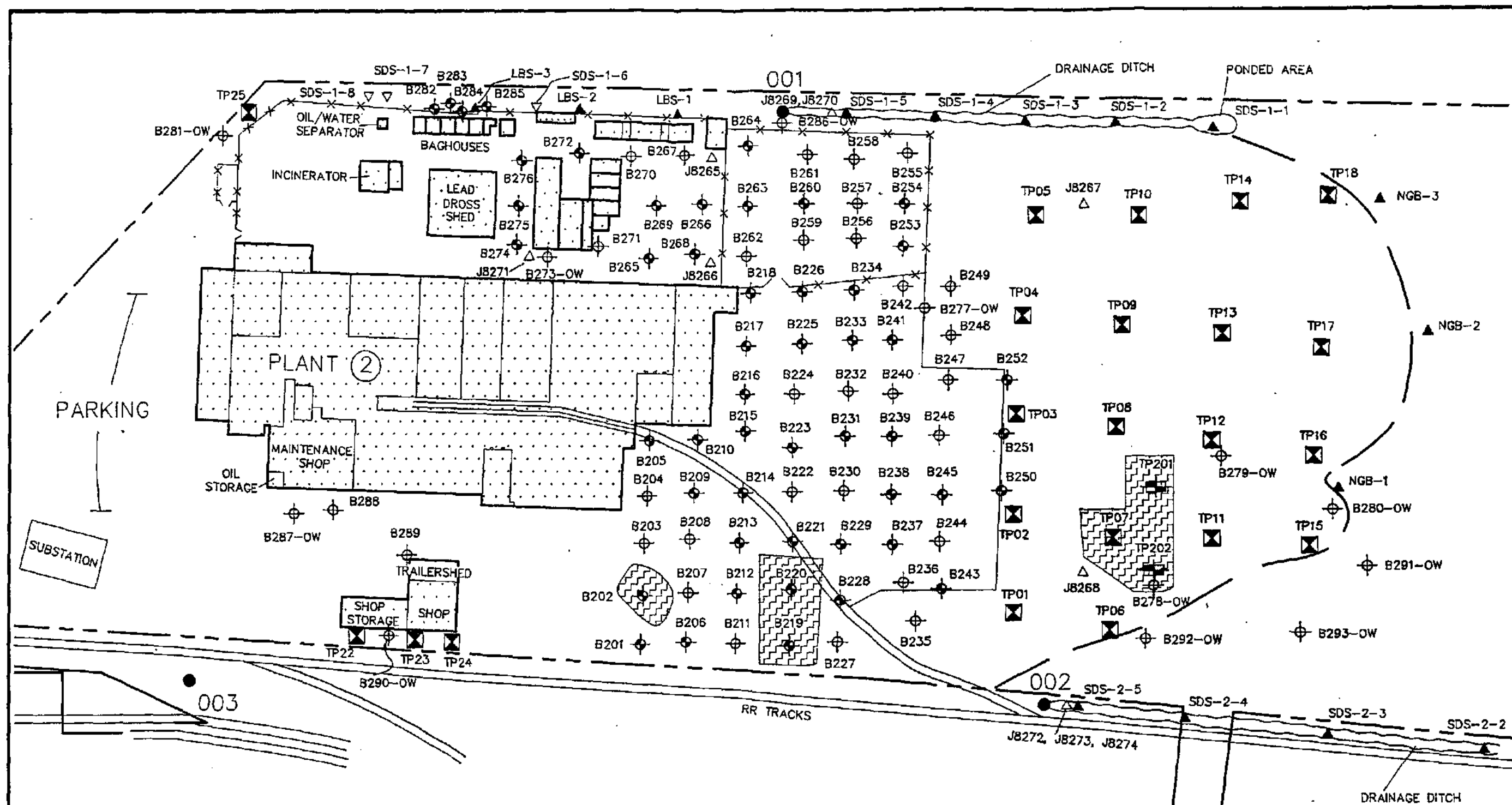


FIGURE 6

FOIL204316



NOTE:

AREA WITHIN HATCHURED MARKS INCLUDES SOIL WITH PCB'S CONCENTRATIONS >25 PPM. AREA IS ESTIMATE ONLY BASED ON SAMPLING AND ANALYSIS PERFORMED TO DATE.

ACTUAL EXTENT OF COMPOUND PRESENCE MAY DIFFER.



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ROTH BROS. PLANT 2
EAST SYRACUSE, NEW YORK

PCB THRESHOLD AREAS

SCALE: 1 IN. = 100 FT.

MAY 1991

FIGURE 7

FOIL 204317

APPENDIX A
Test Boring Reports



H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B201	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 24 October 1990 FINISH: 24 October 1990 DRILLER: W. Rice H&A REP: W. Lanik
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4 --- ---	SS 2-3/8 140 30	--- --- --- ---	RIG TYPE: Mobile B-57, Truck Mounted BIT TYPE: --- DRILL MUD: --- OTHER: Advanced auger through asphalt to 0.9 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
						-ASPHALT WITH SUB-BASE-	
		8	S1	0.9	0.9	Medium dense dark brown sandy SILT, little to trace gravel, trace roots, with wood fragments and glass fragments. -FILL- Loose brown interbedded laminated SILT and medium to fine SAND. -LACUSTRINE- Bottom of Boring at 4.9 ft.	
		8 9 10	18"/24"	2.9	3.0		
		2 2 2	S2* 24"/24"	2.9 4.9			
-5-							
-10-							
-15-							
-20-							
-25-							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 4.9 ROCK CORED (LIN FT): -- SAMPLES: 2S
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							BORING NO. FOIL 204319 B201

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B202	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 24 October 1990 FINISH: 24 October 1990 DRILLER: W. Rice H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: --- DRILL MUD: --- OTHER: Advanced auger through asphalt to 1.0 ft.		
HAMMER WEIGHT (LB)		---	140	---			
HAMMER FALL (IN)		---	30	---			
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
						-ASPHALT WITH SUB-BASE-	
		15	S1	1.0	1.0	Dense brown to black CINDER FRAGMENTS and particles little to trace gravel.	
		16	20"/24"	3.0			
		21					
		26					
		3	S2*	3.0	3.4	-FILL-	
		2	18"/24"	5.0		Very loose dark brown ORGANIC SILT, little to trace sand. -LACUSTRINE-	
5		1					
		2	S3*	5.0	4.9	Very loose brown to dark brown interbedded laminated SILT and black mottled medium to fine SAND. -LACUSTRINE-	
		1	24"/24"	7.0			
		3				Bottom of Boring at 7.0 ft.	
10						Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis.	
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 7.0
							ROCK CORED (LIN FT): --
							SAMPLES: 3S
							BORING NO. FOIL 204320 B202

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8203	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 24 October 1990 FINISH: 24 October 1990 DRILLER: W. Rice H&A REP: W. Lenik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		8	S1	1.0	1.5	-ASPHALT WITH SUB-BASE- Medium dense brown sandy coarse to fine GRAVEL, trace wood fragments.	
		5	19"/24"	3.0	3.2	Loose brown silty fine SAND, with layer of black-stained metal cuttings from 1.5 to 1.8 ft., and 3.0 to 3.2 ft.	
		3	S2	3.0		-FILL-	
		2	24"/24"	5.0		Loose red-brown sandy SILT, little gravel. -GLACIAL TILL-	
10		3				Bottom of Boring at 5.0 ft.	
15		2					
20		2					
25		3					
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --
							SAMPLES: 25
						BORING NO.	FOI 204321 8203

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8204	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 24 October 1990 FINISH: 24 October 1990 DRILLER: W. Rice H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		14	S1	1.0	1.0	-ASPHALT WITH SUB-BASE-	
		11	18"/24"	3.0		Medium dense gray-brown coarse to fine SAND, little to trace gravel.	
		5				-FILL-	
		2	S2	3.0	3.3	Loose brown interbedded laminated SILT and medium to fine SAND.	
		3	24"/24"	5.0		-LACUSTRINE-	
10		2				Bottom of Boring at 5.0 ft.	
15		2					
20		3					
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 5.0
							ROCK CORED (LIN FT): --
							SAMPLES: 2S
							BORING NO. 8204

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. 8205	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted			DATUM:
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---			START: 24 October 1990
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 24 October 1990
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.			DRILLER: W. Rice H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
-	-	15			1.5	-ASPHALT WITH SUB-BASE- Medium dense brown coarse to fine GRAVEL.		
		15	S1	1.0		Medium dense sandy coarse to fine GRAVEL.		
		25	18"/24"	3.0		-FILL- Same, except loose, with layer of yellow-brown sandy SILT from 3.8 to 4.1 ft.		
		4	S2*	3.0		Medium dense brown interbedded SILT and, medium to fine SAND, with dark brown organic silt layer.		
		5	20"/24"	5.0		4.1	-LACUSTRINE- Bottom of Boring at 5.0 ft.	
-5		4						
		5						
		4						
		9						
-10								
-15								
-20								
-25								
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0 ROCK CORED (LIN FT): -- SAMPLES: 2S	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER			
							FOI 204323 BORING NO. 8205	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B206	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 24 October 1990 FINISH: 24 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		12	S1	1.0	1.5	-ASPHALT WITH SUB-BASE- Medium dense gray-brown coarse sandy GRAVEL.	
		15	20"/24"	3.0		Medium dense brown mottled sandy SILT, little gravel, trace cinders, with layer of black-stained metal cuttings from 2.6 to 3.1 ft.	
		17	S2*	3.0	3.1	-FILL-	
		13	12"/24"	5.0		Loose dark brown ORGANIC SILT, with layer of medium sand, wet.	
		3	S3*	5.0	5.2	-LACUSTRINE-	
	2	4	10"/24"	7.0		Medium dense brown to red brown sandy SILT, little to trace gravel.	
		7				-GLACIAL TILL-	
		8				Bottom of Boring at 7.0 ft.	
10						Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis.	
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 7.0 ROCK CORED (LIN FT): --- SAMPLES: 3S
							BORING NO. FOI 204324 B206

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT				BORING NO. B207		
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
ITEM			CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:	
TYPE			Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounte			DATUM:	
INSIDE DIAMETER (IN)			4-1/4	1-3/8	---	BIT TYPE: ---			START: 24 October 1990	
HAMMER WEIGHT (LB)			---	140	---	DRILL MUD: ---			FINISH: 24 October 1990	
HAMMER FALL (IN)			---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.			DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS				
5		13 9 7 5 2 3 2 3				-ASPHALT WITH SUB-BASE- Medium dense brown sandy GRAVEL.				
			S1	1.0	1.5					
			15"/24"	3.0	3.0	Medium dense brown to black silty coarse to fine SAND, with cinder and brick particles, and layer of black ash from 1.8 to 2.0 ft. -FILL-				
			S2	3.0		Loose dark brown to brown mottled SILT, with layer of organic silt. -LAQUSTRINE-				
			24"/24"	5.0		Bottom of Boring at 5.0 ft.				
10										
15										
20										
25										
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY		
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0			
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --			
							SAMPLES: 2S			
						BORING NO.		FOIL 204325 B207		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT				BORING NO. 8208				
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan				
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES				ELEVATION:			
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted				DATUM:			
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---				START: 24 October 1990			
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---				FINISH: 24 October 1990			
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.				DRILLER: D. Richmond H&A REP: W. Lanik			
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS						
		9	S1	1.0	1.9	-ASPHALT WITH SUB-BASE- Medium dense brown sandy coarse to fine GRAVEL.						
		3	2 1/2" / 24"	3.0		Loose gray-brown coarse to fine sandy SILT, layer of dark brown organic silt.						
		3	S2	3.0	3.5	-LACUSTRINE-						
		2	18" / 24"	5.0		Loose light brown interbedded laminated SILT and coarse to medium SAND. -LACUSTRINE-						
5		4				Bottom of Boring at 5.0 ft.						
10												
15												
20												
25												
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY				
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon		OVERBURDEN (LIN FT): 5.0				
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER			ROCK CORED (LIN FT): --				
								SAMPLES: 2S				
								BORING NO. FOIL204326 8208				

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B210	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 24 October 1990 FINISH: 24 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.5 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
					1.0	-ASPHALT WITH SUB-BASE-	
		7	S1	1.5		Medium dense brown to dark brown sandy SILT, little gravel, trace cinder fragments.	
		9				-FILL-	
		11	24"/24"	3.5	3.0	Loose dark brown to black mottled ORGANIC SILT.	
		2	S2*	3.5		Same.	
5		2	14"/24"	5.5		-LACUSTRINE-	
		2	S3*	5.5		Same, except very loose, with layer of light brown laminated fine sandy SILT.	
		1	24"/24"	7.5		-LACUSTRINE-	
		1				Bottom of Boring at 7.5 ft.	
10						Notes:	
						*1. Sample obtained with 1-3/8 in. ID split spoon.	
						2. Sample S1 submitted for chemical analysis.	
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 7.5 ROCK CORED (LIN FT): -- SAMPLES: 3S BORING NO. 8210
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. B211	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted			DATUM:
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---			START: 25 October 1990
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 25 October 1990
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.			DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
						-ASPHALT WITH SUB-BASE-		
		9	S1	1.0	1.0	Medium dense gray-brown gravelly coarse to medium SAND, with layer of black-stained metal cuttings from 1.9 to 2.0 ft. -FILL-		
		15	18"/24"	3.0	2.0			
		6	S2	3.0	3.2	Medium stiff brown and black mottled ORGANIC SILT. -LACUSTRINE-		
		4	14"/24"	5.0				
-5		4				Loose brown medium SAND, with occasional layer of silty fine sand. -LACUSTRINE-		
		5				Bottom of Boring at 5.0 ft.		
-10								
-15								
-20								
-25								
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --	
							SAMPLES: 2S	
							BORING NO. FOIL204329 B211	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8212	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION:
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		DATUM:
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		START: 25 October 1990
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		FINISH: 25 October 1990
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.		DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
						-ASPHALT WITH SUB-BASE-	
		20	S1	1.0	1.0	Dense brown sandy GRAVEL, wet.	
		27	10"/24"	3.0			
		55					
		51	S2*	3.0	3.1	-FILL-	
		24	24"/24"	5.0	4.1	Medium dense brown mottled coarse to fine SAND, little to trace fine gravel. -LACUSTRINE-	
		4				Loose red-brown sandy SILT, little to trace fine gravel. -GLACIAL TILL-	
		4					
		5				Bottom of Boring at 5.0 ft.	
Notes: *1. Sample obtained with 1-3/8 in. 10 split spoon. 2. Sample S1 submitted for chemical analysis.							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			SUMMARY	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER	OVERBURDEN (LIN FT): 5.0	
						ROCK CORED (LIN FT): --	
						SAMPLES: 2S	
						BORING NO. 8212	

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H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. B214	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION: DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted			
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---			
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.			
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
		6			1.0	-ASPHALT WITH SUB-BASE-		
		5	S1	1.0		Loose light brown to brown mottled sandy SILT, trace gravel, with cinder fragments and particles, and metal pieces. -FILL-		
		5	24"/24"	3.0	2.8	Soft light brown mottled SILT, trace organics.		
		2	S2*	3.0				
		2	24"/24"	5.0		-LACUSTRINE-		
5		2				Bottom of Boring at 5.0 ft.		
Notes:								
*1. Sample obtained with 1-3/8 in. ID. split spoon.								
2. Sample S1 submitted for chemical analysis.								

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B215
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II							FILE NO.	70185-42
CLIENT: NIXON HARGRAVE DEVANS & DOYLE							SHEET NO.	1 OF 1
CONTRACTOR: PARRATT-WOLFF, INC.							LOCATION:	See Plan
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION:	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		DATUM:	
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		START: 25 October 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		FINISH: 25 October 1990	
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.		DRILLER: D. Richmond	
							H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
						-ASPHALT WITH SUB-BASE-		
		21	S1	1.0	1.0	Medium dense dark brown gravelly coarse to fine SAND, trace cinders, with layer of black-stained cinder particles from 1.6 to 1.8 ft.		
		19	20"/24"	3.0	2.8	-FILL-		
		15	S2*	3.0		Stiff gray-brown to light brown mottled SILT, with layer of organic silt.		
		12	24"/24"	5.0		-LACUSTRINE-		
-5		10				Bottom of Boring at 5.0 ft.		
		8				Notes:		
		6				*1. Sample obtained with 1-3/8 in. ID split spoon.		
		6				2. Sample S1 submitted for chemical analysis.		
-10								
-15								
-20								
-25								
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT):	5.0
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT):	--
							SAMPLES:	2S
						BORING NO.		FOIL 001533

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H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B218	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted			DATUM:	
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---			START: 25 October 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 25 October 1990	
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through concrete to 1.0 ft.			DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
					0.7	-CONCRETE PAD-			
		25	S1	1.0		Dense red-brown to dark brown sandy SILT, little gravel, with wood fragments.			
		30	24"/24"	3.0		-FILL-			
		32				Same.			
		23	S2*	3.0	3.5	Loose light brown mottled fine SAND, with layer of dark-brown fine sand little organics from 3.5 to 4.0 ft.			
		7	24"/24"	5.0		-LACUSTRINE-			
-5		3				Bottom of Boring at 5.0 ft.			
		2							
		4							
-10									
-15									
-20									
-25									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon		OVERBURDEN (LIN FT): 5.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER			ROCK CORED (LIN FT): --	
								SAMPLES: 2S	
						BORING NO.		FOIL 204336 B218	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B219	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4 --- ---	SS 2-3/8 140 30	--- --- --- ---	RIG TYPE: Mobile B-57, Truck Mounted BIT TYPE: --- DRILL MUD: --- OTHER: Advanced auger through asphalt to 1.0 ft.		
						ELEVATION: DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
					0.5	-ASPHALT-	
		3	S1	1.0		Very dense dark brown to black CINDER PARTICLES AND FRAGMENTS. -FILL- Medium stiff brown and black mottled, ORGANIC SILT. -LACUSTRINE- Loose light brown laminated silty fine SAND, with occasional layer of medium sand. -LACUSTRINE- Bottom of Boring at 5.0 ft.	
		4	14"/24"	3.0	2.0		
		6	S2*	3.0	3.0		
		4	24"/24"	5.0			
5		3					
		4					
		6					
		4					
		6					
10							
15							
20							
25							
WATER LEVEL DATA							
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			SAMPLE IDENTIFICATION	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER	SUMMARY	
						O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0 ROCK CORED (LIN FT): -- SAMPLES: 2S BORING NO. FOIL204337 B219

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B220	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
						-ASPHALT WITH SUB-BASE-	
		23	S1	1.0	1.0	Medim dense dark brown to black CINDER FRAGMENTS and ASH, trace gravel, oily odor. -FILL- Loose brown mottled coarse to medium SAND, with occasional seams of silty fine sand, and layer of dark brown silty fine sand, little organics. -LACUSTRINE- Bottom of Boring at 5.0 ft. Notes: *1.. Sample obtained with 1-3/8 in. split spoon. 2. Sample S1 submitted for chemical analysis.	
		13	20"/24"	3.0	2.7		
		11	S2*	3.0			
		10	24"/24"	5.0			
5		2					
		3					
		5					
		6					
10							
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 5.0 ROCK CORED (LIN FT): -- SAMPLES: 25 BORING NO. FOIL 204338 B220

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. B221	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION: DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile 8-57, Truck Mounted			
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---			
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 1.0 ft.			
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
						-ASPHALT WITH SUB-BASE-		
		4	S1	1.0	1.0	Loose dark brown sandy GRAVEL, trace cinders. -FILL-		
		7	16"/24"	3.0	2.3			
		4			3.0	Medium dense dark brown ORGANIC SILT.		
		5	S2*	3.0		Medium dense light brown laminated fine SAND, with frequent seams of silt. -LACUSTRINE-		
		6	24"/24"	5.0	4.5	Medium dense red-brown sandy SILT, trace fine gravel. -GLACIAL TILL-		
		6				Bottom of Boring at 5.0 ft.		
		7						
5								
10								
15								
20								
25								
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --	
							SAMPLES: 2S	
							BORING NO. FOIL 204339 B221	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B222	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted				
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---				
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---				
HAMMER FALL (IN)		---	30	---	OTHER: Advanced auger through asphalt to 0.5 ft.				
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
		5	S1	0.5	0.5	-ASPHALT-			
	7	7	24"/24"	2.5	2.1	Medium dense dark brown to brown mottled SILT, with wood fragments, and layer of cinders from 1.8 to 1.9 ft.			
		5	S2	2.5		-FILL-			
	3	2	24"/24"	4.5		Medium stiff dark brown to gray-brown mottled sandy SILT, trace organics.			
		2				-LACUSTRINE-			
5						Bottom of Boring at 4.5 ft.			
10									
15									
20									
25									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 4.5		
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --		
							SAMPLES: 2S		
							BORING NO.	FOIL 204340 B222	

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M&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8225	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through concrete pad 0.8 ft.		
						ELEVATION: DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond M&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
					0.8	-CONCRETE PAD-	
		9	S1	1.0	1.5	Loose brown gravelly coarse SAND. -FILL-	
		9	15"/24"	3.0			
		8	S2*	3.0	3.0	Loose dark brown sandy SILT, little gravel, with cinders. -FILL-	
		4	18"/24"	5.0			
5		3	S3*	5.0		Loose dark brown ORGANIC SILT, with layer of light brown silt from 3.0 to 4.0 ft. -LACUSTRINE-	
		4	24"/24"	7.0		Loose light brown silty fine SAND, grading into coarse to medium SAND, with layer of organic silt.	
		3				Bottom of Boring at 7.0 ft.	
		5					
10							
15							
20							
25							

WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon		OVERBURDEN (LIN FT): 7.0	ROCK CORED (LIN FT): --
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER				
								SAMPLES: 3S	
								BORING NO.	FOIL 204343 8225

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B226	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION:
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		DATUM:
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		START: 26 October 1990
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		FINISH: 26 October 1990
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
					1.0	-ASPHALT WITH SUB-BASE-	
		14	S1	1.0		Medium dense dark brown coarse to fine SAND, little gravel, with metal fragments.	
		15	18"/24"	3.0	2.5	-FILL-	
		15	S2*	3.0		Medium dense dark brown sandy ORGANIC SILT.	
		16	18"/24"	5.0	5.0	Loose dark brown sandy ORGANIC SILT, trace fine gravel.	
		3	S3*	5.0		-LACUSTRINE-	
		4	22"/24"	7.0	6.5	Loose light brown medium to fine SAND, with occasional silt seam.	
		3				-LACUSTRINE-	
		4				Medium dense red-brown sandy SILT, trace gravel.	
		5				-GLACIAL TILL-	
		6				Bottom of Boring at 7.0 ft.	
		8					
Notes: *1. Sample obtained with 1-3/8 in ID split spoon. 2. Sample S1 submitted for chemical analysis.							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			OVERBURDEN (LIN FT):	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
						7.0	OVERBURDEN (LIN FT):
						--	ROCK CORED (LIN FT):
						3S	SAMPLES:
						8226	BORING NO.

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT				BORING NO. B227	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted			DATUM:	
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---			START: 25 October 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 25 October 1990	
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.			DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
						-ASPHALT WITH SUB-BASE-			
	2	2	S1	1.0	1.2	Loose gray-brown to light brown mottled silty coarse to fine SAND, with layer of organic rich silt.			
	4	4	22"/24"	3.0		-LACUSTRINE-			
	8					Bottom of Boring at 3.0 ft.			
5									
10									
15									
20									
25									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon		OVERBURDEN (LIN FT): 3.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER			ROCK CORED (LIN FT): --	
								SAMPLES: 1S	
						BORING NO.		FOIL 204245 B227	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B228	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers to 0.5 ft.		
					ELEVATION: DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
		2	S1	0.5	1.2	Loose dark brown GRAVEL, trace silt, trace organics, with black staining, oily odor. -FILL-	
		3	24"/24"	2.5		Soft dark brown mottled ORGANIC SILT, trace sand, with layer of light brown silt. -LACUSTRINE-	
		5				Bottom of Boring at 2.5 ft.	
5						Note: Sample S1 submitted for chemical analysis.	
10							
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 2.5 ROCK CORED (LIN FT): -- SAMPLES: 1S
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							BORING NO. FOIL204346 B228

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. B229	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION:	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		DATUM:	
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		START: 26 October 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		FINISH: 26 October 1990	
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
						-ASPHALT WITH SUB-BASE-		
		30	S1	1.0	1.0	Medium dense dark brown gravelly coarse to fine SAND, trace silt, with layer of black cinders from 1.5 to 1.8 ft.		
		28	20"/24"	3.0		-FILL-		
		22	S2"	3.0	3.5	Loose dark brown sandy SILT, trace gravel, with cinders and wood fragments.		
		17	24"/24"	5.0		-FILL-		
5		2				Loose gray-brown to brown mottled coarse to fine SAND, little to trace gravel, trace silt, with layer of silt, little organics.		
		3				-LACUSTRINE-		
		3				Bottom of Boring at 5.0 ft.		
10						Notes:		
						*1. Sample obtained with 1-3/8 in. ID split spoon.		
						2. Sample S1 submitted for chemical analysis.		
15								
20								
25								
WATER LEVEL DATA			SAMPLE IDENTIFICATION			SUMMARY		
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --	
							SAMPLES: 2S	
							FOIL204347 BORING NO. B229	

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B231	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
						-ASPHALT WITH SUB-BASE-	
		15	S1	1.0	1.0	Medium dense brown to red-brown sandy SILT, little to trace gravel, trace cinders.	
		15	20"/24"	3.0			
		16				-FILL-	
		9	S2*	3.0	3.3	Loose gray-brown to dark brown mottled coarse to fine SAND, little to trace gravel, trace silt, with of sand, little organics.	
		5	18"/24"	5.0			
		2	S3*	5.0	5.7	Same.	
		2	24"/24"	7.0			
		3				-LACUSTRINE-	
		5				Medium dense light brown medium to fine SAND, with frequent layers of silt.	
		9					
						-LACUSTRINE-	
						Bottom of Boring at 7.0 ft.	
Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 is submitted for chemical analysis.							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 7.0 ROCK CORED (LIN FT): -- SAMPLES: 3S BORING NO.

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B232	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 0.5 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
		11	S1	0.5	0.5	-ASPHALT WITH SUB-BASE-	
		9				Medium dense light brown mottled medium to fine SAND, trace gravel, with wood fragments. -FILL- Loose dark brown fine sandy ORGANIC SILT.	
		8	14"/24"	2.5	2.6		
		10	S2	2.5			
		4	20"/24"	4.5		-LACUSTRINE-	
		3				Bottom of Boring at 4.5 ft.	
		3					
		3					
		3					
-5-							
-10-							
-15-							
-20-							
-25-							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY OVERBURDEN (LIN FT): 4.5 ROCK CORED (LIN FT): -- SAMPLES: 2S
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							BORING NO. FOIL 204350 B232

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B233	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM			CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION:	
TYPE			Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		DATUM:	
INSIDE DIAMETER (IN)			4-1/4	2-3/8	---	BIT TYPE: ---		START: 26 October 1990	
HAMMER WEIGHT (LB)			---	140	---	DRILL MUD: ---		FINISH: 26 October 1990	
HAMMER FALL (IN)			---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
		18	S1	1.0	1.0	-ASPHALT WITH SUB-BASE-			
		20	24"/24"	3.0	2.7	Medium dense dark brown mottled sandy SILT, little gravel, with cinders. -FILL-			
		15	S2*	3.0		Stiff dark brown sandy ORGANIC SILT, trace gravel.			
		5	24"/24"	5.0	4.5	-LACUSTRINE-			
-5		6				Medium dense brown mottled coarse to fine SAND, little gravel, trace silt. -LACUSTRINE-			
		7				Bottom of Boring at 5.0 ft.			
Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis.									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon		OVERBURDEN (LIN FT): 5.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER			ROCK CORED (LIN FT): --	
								SAMPLES: 2S FOIL204351	
								BORING NO. B223	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8234	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		28			1.0	-ASPHALT WITH SUB-BASE-	
		30	S1	1.0		Dense red-brown sandy SILT, little gravel.	
		58	20"/24"	3.0		-FILL-	
		12	S2*	3.0	3.0	Dense brown coarse to fine SAND, with concrete pieces.	
		16	6"/24"	5.0		-FILL-	
25						Bottom of Boring at 5.0 ft.	
10						Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis.	
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --
							SAMPLES: 2S
						BORING NO.	FOI 204352 8234

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. B235																												
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON KARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan																												
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik																												
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted																														
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---																														
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---																														
HAMMER FALL (IN)		---	30	---	OTHER: ---																														
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS																													
5		5	S1	0.0	0.4	Medium dense brown gravelly coarse to medium SAND.																													
		13	20"/24"	2.0		Medium dense black CINDERS and ASH. -FILL-																													
		13	S2	2.0		Same, except very loose.																													
		9	8"/24"	4.0		-FILL-																													
		2	S3	4.0		Same.																													
		1			4.4	Medium stiff light brown mottled SILT, trace coarse to medium sand, with layer coarse to medium sand from 4.4 to 5.0 ft. -LACUSTRINE-																													
		2	24"/24"	6.0		Bottom of Boring at 6.0 ft.																													
		4																																	
		4																																	
		3																																	
10																																			
15																																			
20																																			
25																																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="6" style="text-align: center;">WATER LEVEL DATA</th> <th style="text-align: center;">SAMPLE IDENTIFICATION</th> <th style="text-align: center;">SUMMARY</th> </tr> <tr> <th rowspan="2" style="text-align: center;">DATE</th> <th rowspan="2" style="text-align: center;">TIME</th> <th rowspan="2" style="text-align: center;">ELAPSED TIME (HR)</th> <th colspan="3" style="text-align: center;">DEPTH (FT) TO:</th> <th rowspan="2"> O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon </th> <th rowspan="2"> OVERBURDEN (LIN FT): 6.0 ROCK CORED (LIN FT): -- SAMPLES: 3S </th> </tr> <tr> <th style="text-align: center;">BOTTOM OF CASING</th> <th style="text-align: center;">BOTTOM OF HOLE</th> <th style="text-align: center;">WATER</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> BORING NO. FOIL204353 B235 </td> </tr> </table>									WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY	DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 6.0 ROCK CORED (LIN FT): -- SAMPLES: 3S	BOTTOM OF CASING	BOTTOM OF HOLE	WATER								BORING NO. FOIL204353 B235
WATER LEVEL DATA						SAMPLE IDENTIFICATION	SUMMARY																												
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 6.0 ROCK CORED (LIN FT): -- SAMPLES: 3S																												
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER																														
							BORING NO. FOIL204353 B235																												

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8236	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan 15 ft. NW	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		
TYPE		Auger	SS	---	RIG TYPE: Mobile 8-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: ---		
						ELEVATION: DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
		3	S1	0.0		Loose gray-brown coarse sandy GRAVEL.	
		5					
		3	10"/24"	2.0		Same. -FILL-	
		5			2.4		
		6	S2	2.0		Very loose dark-brown to brown mottled fine sandy SILT, with layer of silt, little organics from 3.2 to 3.8 ft.	
		2	20"/24"	4.0		-LACUSTRINE-	
		1				Bottom of Boring at 4.0 ft.	
		1					
5							
10							
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			OVERBURDEN (LIN FT): 4.0	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
						0 Open End Rod	ROCK CORED (LIN FT): --
						T Thin Wall Tube	SAMPLES: 2S
						U Undisturbed Sample	FOIL204354
						S Split Spoon	BORING NO. 8236

TABLE VI
ROTH BROS. - PLANT 2
ALTERNATIVE REMEDIAL TECHNOLOGIES
Page 1 of 2

<u>METHOD NAME</u>	<u>DEVELOPER</u>	<u>SYNOPSIS OF METHOD</u>	<u>APPLICABILITY</u>	<u>REMARKS</u>	<u>ESTIMATED UNIT COST</u>
Offsite Disposal	--	Excavate soils and dispose as hazardous waste/special waste. Backfill/revegetate.	Soils w/high metals, CLP metals and PCBs.	--	\$275-360/Ton
In-Situ Solidification	GeoCon	Treat soils using 36" diameter circular bore, injecting solidification product (a cement-organic clay mix) into soils. An overlapping circular pattern is conducted over the affected areas.	Soils/sludges contaminated with metals and PCBs.	Bulk density increased by 21% End product is a dense, low porosity homogeneous mass of soil.	\$195/Ton
Silicate Stabilization (2)	Silicate Technology Corp.	Solidification and stabilization with silicate compounds. Material is excavated, mixed with silicates, and placed in confining pit on site or cast into molds for offsite disposal.	Soils, groundwater and sludges with metals, CN, ammonia and high molecular weight organics.	Wastes immobilized and bound into a hardened, leach-resistant, concrete-like solidified mass.	\$104/Ton (if treat > 1,000 cu. yd.)
	Chem Fix Environmental Services, Inc.	Solidification and stabilization of excavated soils using soluble silicates and silicate setting agents.	Soils, sludges with heavy metals, high molecular weight organics.	20%-50% increase in volume of excavated waste. Effective in reducing concentration of lead in extracts of TCLP by 94-99%. No significant volatilization of PCBs during treatment process.	\$75/Ton
Contain In-Place with cap/slurry walls	--	Cover affected area with low permeability cap to prevent infiltration. Surround with low permeability bentonite slurry walls.	Most wastes except non-polar organics.	Isolation technology.	\$36-44/Ton

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. 8237	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION: DATUM:	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted			START: 29 October 1990	
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---			FINISH: 29 October 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			DRILLER: D. Richmond	
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.			H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
						-ASPHALT WITH SUB-BASE-			
			S1	1.0	1.7	Medium dense gray-brown sandy GRAVEL.			
			18"/24"	3.0		Medium dense brown gravelly medium to fine SAND, trace silt, trace cinders. -FILL- Same, except loose and trace gravel.			
			S2*	3.0		-FILL-			
			12"/24"	5.0	4.8	Medium stiff dark brown to brown sandy ORGANIC SILT.			
			S3*	5.0					
			11"/24"	7.0		-LACUSTRINE-			
						Bottom of Boring at 7.0 ft.			
<u>Notes:</u> *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis.									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon		OVERBURDEN (LIN FT): 7.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER			ROCK CORED (LIN FT): --	
								SAMPLES: 3S	
								BORING NO. FOIL 204356 8237	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B238	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		
					ELEVATION: DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
						-ASPHALT WITH SUB-BASE-	
		13	S1	1.0	1.0	Medium dense brown to light-brown mottled gravelly medium to fine SAND, with wood fragments.	
		9	20"/24"	3.0			
		11	S2*	3.0	3.2	-FILL-	
		2	24"/24"	5.0		Soft dark brown sandy ORGANIC SILT, with layer of brown sandy SILT, from 4.5 to 5.0 ft.	
		2				-LACUSTRINE-	
		2				Bottom of Boring at 5.0 ft.	
Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis.							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 5.0
							ROCK CORED (LIN FT): --
							SAMPLES: 2S
							BORING NO. FOIL204357 B238

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B240	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		7	S1	1.0	1.2	-ASPHALT WITH SUB-BASE-	
		10	24"/24"	3.0		Medium dense red-brown sandy SILT, little to trace gravel, trace organics.	
		9	S2	3.0	3.9	Same.	
		8	18"/24"	5.0		-GLACIAL TILL-	
10		5				Medium dense brown coarse to fine SAND, trace gravel, trace silt.	
		6				-LACUSTRINE-	
15						Bottom of Boring at 5.0 ft.	
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 5.0
							ROCK CORED (LIN FT): --
							SAMPLES: 2S
							BORING NO. 8240

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8241	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
		15	S1	0.5	0.5	-ASPHALT WITH SUB-BASE-	
		15	24"/24"	2.5		Medium dense red-brown sandy SILT, little to trace gravel, trace metal fragments and ash.	
		14	S2*	2.5		-FILL-	
		6	24"/24"	4.5		Same, except little to trace ash.	
		7	S3*	4.5		-FILL-	
5		6	16"/24"	6.5	6.0	Same.	
		6				Medium dense light brown medium SAND, with trace organics.	
		7				-LACUSTRINE-	
		8				Bottom of Boring at 6.5 ft.	
10						Notes: *1. Sample obtained with 1-3/8 in. ID. split spoon. 2. Sample S1 submitted for chemical analysis.	
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 6.5
							ROCK CORED (LIN FT): --
							SAMPLES: 3S
							BORING NO. FOIL204360 8241

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B242	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
					1.0	-ASPHALT WITH SUB-BASE-	
		13	S1	1.0		Medium dense red-brown sandy SILT, little gravel.	
		14	24"/24"	3.0		-FILL-	
		15				Same.	
		11	S2	3.0		-FILL-	
		14	3"/24"	5.0		Bottom of Boring at 5.0 ft.	
		15					
		16					
5							
10							
15							
20							
25							
WATER LEVEL DATA			SAMPLE IDENTIFICATION			SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --
							SAMPLES: 2S
							BORING NO. FOIL 204361 B242

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B243	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile 8-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		14	S1	1.0	1.8	-ASPHALT WITH SUB-BASE-	
		10	14"/24"	3.0		Medium dense gray-brown coarse to fine sandy GRAVEL.	
		8			5.2	Loose black and brown mottled SILT, little gravel, with cinder fragments and ash. Same, except medium dense. -FILL-	
		5	S2	3.0			
		10	20"/24"	5.0			
	14	S3*	5.0		Medium dense light brown mottled fine sandy SILT, with layer of coarse to medium sand from 5.2 to 5.7 ft. -LACUSTRINE- Bottom of Boring at 7.0 ft.		
	3	24"/24"	7.0				
10		5				Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Samples S1 and S2 submitted for chemical analysis.	
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 7.0 ROCK CORED (LIN FT): -- SAMPLES: 3S
						BORING NO. FOIL 204362 8243	

[illegible]

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B246	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
						-ASPHALT WITH SUB-BASE-	
		13	S1	1.0	1.0	Medium dense dark brown coarse to fine SAND, little silt, trace gravel, with cinders and wood fragments.	
		8	7"/24"	3.0		-FILL-	
		9			3.0	Medium dense red brown sandy SILT.	
		5	S2	3.0		-FILL-	
		6	18"/24"	5.0	4.3	Medium dense light brown medium to fine SAND.	
5		6				-LACUSTRINE-	
		14				Bottom of Boring at 5.0 ft.	
10							
15							
20							
25							
WATER LEVEL DATA			SAMPLE IDENTIFICATION		SUMMARY		
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --
							SAMPLES: 25
						BORING NO.	FOIL B246

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. 8248	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:
TYPE		---	SS	---	RIG TYPE: Mobile 8-57, Truck Mounted			DATUM:
INSIDE DIAMETER (IN)		---	1-3/8	---	BIT TYPE: ---			START: 26 October 1990
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 26 October 1990
HAMMER FALL (IN)		---	30	---	OTHER: ---			DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
		11	S1	0.0		Medium dense dark brown coarse to fine SAND, little gravel, with cinders and wood fragments. -FILL-		
		12						
		10	14"/24"	2.0	2.0			
		10	S2	2.0		Medium dense red-brown sandy SILT, trace gravel, with occasional layers of dark brown organic silt. -GLACIAL TILL-		
		6	19"/24"	4.0				
		6						
		10				Bottom of Boring at 4.0 ft.		
-5								
-10								
-15								
-20								
-25								
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 4.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --	
							SAMPLES: 2S	
							BORING NO. 8248	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B249	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		---	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		---	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: ---		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		9	S1	0.0	2.0	Medium dense dark brown sandy SILT, trace fine gravel, with ash layer. -FILL-	
		11	18"/24"	2.0			
		13	S2	2.0		Medium dense red-brown sandy SILT, little to trace gravel. -GLACIAL TILL-	
		14	24"/24"	4.0		Same, with occasional dark brown layer of organic sandy silt. -GLACIAL TILL-	
10		12	S3	4.0			
		12	16"/24"	6.0		Bottom of Boring at 6.0 ft.	
15		10					
		9					
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 6.0
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --
						SAMPLES: 3S	
						BORING NO.	FOI 204368 B249

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B250	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:	
TYPE		---	SS	---	RIG TYPE: Mobile B-57, Truck Mounted			DATUM:	
INSIDE DIAMETER (IN)		---	2-3/8	---	BIT TYPE: ---			START: 29 October 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 29 October 1990	
HAMMER FALL (IN)		---	30	---	OTHER: ---			DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
		6	S1	0.0		Dense dark brown sandy GRAVEL, with wood fragments and trace cinders.			
		10							
		24	22"/24"	2.0					
		30							
		18	S2*	2.0	2.5	Same. -FILL-			
		2							
		2	15"/24"	4.0		Medium dense red-brown to dark brown mottled SILT, little to trace sand.			
		7				Same.			
-5		3	S3*	4.0		-LACUSTRINE-			
		3			5.0				
		4	24"/24"	6.0		Loose light brown fine sandy SILT.			
		8				-LACUSTRINE-			
						Bottom of Boring at 6.0 ft.			
Notes:									
*1. Samples obtained with 1-3/8 in. ID split spoon.									
2. Sample S1 submitted for chemical analyses.									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon		OVERBURDEN (LIN FT): 6.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER			ROCK CORED (LIN FT): --	
								SAMPLES: 3S	
								BORING NO. FOI 204369 B250	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B251	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile 8-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: ---		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		17	S1	0.0		Dense dark brown sandy GRAVEL, with cinders and ash.	
		19				-FILL-	
		21	14"/24"	2.0			
		30					
		17	NR	2.0-3.0		No Recovery.	
		50				-FILL-	
						Bottom of Boring at 3.0 ft.	
<u>Notes:</u> *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Encountered obstruction from 2.0 ft. to 3.0 ft., auger refusal at 3.0 ft. 3. Sample S1 submitted for chemical analysis.							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 3.0
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --
							SAMPLES: 2S
						BORING NO. FOIL 204370 B251	

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B253	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION: DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted				
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---				
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---				
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.				
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
						-ASPHALT WITH SUB-BASE-			
		13	S1	1.0	1.2	Medium dense red-brown to brown mottled sandy SILT, trace gravel. -GLACIAL TILL- Same. Same. -GLACIAL TILL- Bottom of Boring at 7.0 ft. <u>Notes:</u> *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis.			
		13 14	22"/24"	3.0					
		6 7	S2*	3.0					
5		6 7	12"/24"	5.0					
		4 5	S3*	5.0					
		7	24"/24"	7.0					
10									
15									
20									
25									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 7.0 ROCK CORED (LIN FT): -- SAMPLES: 3S		
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER				
							BORING NO. FOIL204372 B253		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. B254	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
CLIENT: NIXON HARGRAVE DEVANS & DOYLE								
CONTRACTOR: PARRATT-WOLFF, INC.								
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 30 October 1990 FINISH: 30 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted			
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---			
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.			
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
5		40	S1	1.0	1.4	-ASPHALT WITH SUB-BASE-		
		23	20"/24"	3.0		Very dense red-brown mottled sandy SILT, trace gravel.		
		30						
		17	S2	3.0		Same.		
25	10"/24"	5.0	-GLACIAL TILL-					
10		24				Bottom of Boring at 5.0 ft.		
		15						
15		15						
20								
25								
WATER LEVEL DATA								
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			SAMPLE IDENTIFICATION	SUMMARY	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		OVERBURDEN (LIN FT): 5.0 ROCK CORED (LIN FT): -- SAMPLES: 2S BORING NO. 8254	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8255	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4 --- ---	SS 1-3/8 140 30	--- --- --- ---	RIG TYPE: Mobile B-57, Truck Mounted BIT TYPE: --- DRILL MUD: --- OTHER: Advanced augers through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
					1.0	-ASPHALT WITH SUB-BASE-	
		8 20 25 19	S1 15"/24"	1.0 3.0		Dense red-brown sandy SILT, trace gravel.	
						-GLACIAL TILL-	
						Bottom of Boring at 3.0 ft.	
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 3.0 ROCK CORED (LIN FT): -- SAMPLES: 1S BORING NO. 8255
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B257	
PROJECT: ROTN BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted			DATUM:	
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---			START: 30 October 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 30 October 1990	
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.			DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
		13	S1	1.0	1.3	-ASPHALT WITH SUB-BASE-			
		15				Medium dense gray-brown sandy GRAVEL.			
		10	21"/24"	3.0		Medium dense red-brown mottled sandy SILT, trace GRAVEL. -GLACIAL TILL-			
		10				Bottom of Boring at 3.0 ft.			
5									
10									
15									
20									
25									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 3.0		
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --		
							SAMPLES: 1S		
							BORING NO. FOI 204376 B257		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B258	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION: DATUM: START: 30 October 1990 FINISH: 30 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted				
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---				
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---				
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.				
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
						-ASPHALT WITH SUB-BASE- Medium dense gray-brown sandy GRAVEL.			
		17	S1	1.0	1.4				
		12	24"/24"	3.0	2.3	Medium dense red-brown mottled sandy SILT, trace gravel. -FILL-			
		11							
		7	S2	3.0	3.4	Medium dense dark brown sandy SILT, little organics. Same. -BURIED TOPSOIL-			
		8	8"/24"	5.0		Medium dense red brown sandy SILT, trace gravel.			
		9				Same.			
		6	S3	5.0		-GLACIAL TILL-			
		16	12"/24"	7.0					
		4							
		9	S4	7.0		Same.			
		18	14"/24"	9.0		-GLACIAL TILL-			
		15							
		12							
		10							
		9							
		9				Bottom of Boring at 9.0 ft.			
						</			

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B260	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted			DATUM:	
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---			START: 30 October 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 30 October 1990	
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.			DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
						-ASPHALT WITH SUB-BASE-			
		49	S1	1.0	1.0	Dense red-brown sandy SILT, little to trace gravel. -FILL-			
		32	17"/24"	3.0	2.0	Medium dense dark brown sandy SILT, little organics. -LACUSTRINE-			
		16	S2	3.0		Same.			
		4	18"/24"	5.0		-LACUSTRINE-			
		5	S3*	5.0	5.1	Loose brown coarse to fine SAND, trace gravel. -LACUSTRINE-			
		6	8"/24"	7.0		Bottom of Boring at 7.0 ft.			
		7							
		3							
		4							
		3							
		5							
5									
10									
15									
20									
25									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 7.0		
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): -- SAMPLES: Ss		
							BORING NO. FOIL 201379 B260		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. 8261	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:
TYPE		Auger	SS	---	RIG TYPE: Mobile 8-57, Truck Mounted			DATUM:
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---			START: 30 October 1990
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 30 October 1990
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.			DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
						-ASPHALT WITH SUB-BASE-		
		11	S1	1.0	1.0	Medium dense red-brown sandy SILT, trace gravel. -FILL-		
		14	22"/24"	3.0	2.0	Medium dense dark brown to brown coarse to fine SAND, little to trace silt, trace gravel, with organics.		
		15	S2	3.0		-LACUSTRINE-		
		8	5"/24"	5.0		Bottom of Boring at 5.0 ft.		
		6						
		8						
		11						
-5								
-10								
-15								
-20								
-25								
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --	
							SAMPLES: 2S	
							BORING NO. 8261	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B262	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 30 October 1990 FINISH: 30 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile 8-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through concrete pad to 0.5 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		5	S1	0.5	0.5	-CONCRETE PAD-	
		6	12"/24"	2.5	2.1	Medium dense red-brown sandy SILT, trace gravel. -FILL-	
		5				Medium dense dark brown sandy SILT, with trace organics. -BURIED TOPSOIL-	
10		6				Bottom of Boring at 2.5 ft.	
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 2.5 ROCK CORED (LIN FT): -- SAMPLES: 15 FOIL 204381 BORING NO. B262
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT			BORING NO. B263		
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.									FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
ITEM			CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION: DATUM: START: 30 October 1990 FINISH: 30 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
TYPE			Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted					
INSIDE DIAMETER (IN)			4-1/4	2-3/8	---	BIT TYPE: ---					
HAMMER WEIGHT (LB)			---	140	---	DRILL MUD: ---					
HAMMER FALL (IN)			---	30	---	OTHER: Advanced augers through concrete pad to 1.0 ft.					
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS					
						-CONCRETE PAD-					
		8	S1	1.0	1.0	Medium dense brown sandy SILT, little to trace gravel. -FILL-					
		7									
		10	22"/24"	3.0	3.0	Medium dense dark brown sandy SILT, with trace organics. -BURIED SOIL-					
		7	S2	3.0		Very loose brown coarse to fine SAND. -LACUSTRINE-					
		4	13"/24"	5.0		Bottom of Boring at 5.0 ft.					
		3									
		3									

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT				BORING NO. B264	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:	
TYPE		Auger	SS	---	RIG TYPE: Mobile 8-57, Truck Mounted			DATUM:	
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---			START: 30 October 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 30 October 1990	
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 0.5 ft.			DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
		12	S1	0.5	0.5	-ASPHALT WITH SUB-BASE-			
		14			1.8	Medium dense red-brown sandy SILT, trace gravel, with layer of black ash from 1.1 to 1.5 ft.			
		16	24"/24"	2.5		-FILL-			
		30				Dense light brown coarse to medium SAND. -LACUSTRINE-			
						Bottom of Boring at 2.5 ft.			
<p>Note:</p> <p>*1. Sample S1 submitted for chemical analysis.</p>									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 2.5		
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --		
							SAMPLES: 1S		
							BORING NO. 8264		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B265	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON MARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 30 October 1990 FINISH: 30 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through concrete pad to 0.5 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
		13	S1	0.5	0.5	-CONCRETE PAD-	
		16	24"/24"	2.5	2.3	Medium dense brown to dark brown mottled sandy SILT, trace gravel. -FILL-	
		10	S2*	2.5		Loose dark brown organic sandy SILT, little organics.	
		2	12"/24"	4.5		-LACUSTRINE- Loose brown medium to fine SAND, trace coarse sand.	
		3	S3*	4.5		-LACUSTRINE-	
		4	12"/24"	6.5		Bottom of Boring at 6.5 ft.	
		5				Notes: *1. Sample obtained with 1-3/8 in. ID. split spoon. 2. Sample S1 submitted for chemical analysis.	
		6					
		5					
		5					
		8					
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 6.5
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --
							SAMPLES: 3S
						BORING NO. FOIL 204384 B265	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B266	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted			DATUM:	
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---			START: 30 October 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 30 October 1990	
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through concrete pad to 0.5 ft.			DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
5		8 6 6 4	S1	0.5	0.5	-CONCRETE PAD-			
			18"/24"	2.5	1.3	Loose gray-brown gravelly coarse to fine SAND. -FILL-			
						Loose light brown to dark brown mottled silty fine SAND, little to trace gravel, trace organics. -LACUSTRINE-			
Bottom of Boring at 2.5 ft.									
<u>Note:</u> 1. Sample S1 submitted for chemical analysis.									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 2.5		
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --		
							SAMPLES: 1S		
							FOIL 204385 BORING NO. B266		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B267	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 30 October 1990 FINISH: 30 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 0.5 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
					0.5	-ASPHALT WITH SUB-BASE-	
		2	S1	0.5		Loose dark brown sandy SILT, little organics, grading into light brown fine SAND at 2.0 ft.	
		2	24"/24"	2.5		-LACUSTRINE-	
		3					
		6	S2	2.5		Medium dense brown coarse to fine SAND, trace gravel.	
		10	17"/24"	4.5		-LACUSTRINE-	
		12				Bottom of Boring at 4.5 ft.	
		8					
5							
10							
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 4.5
							ROCK CORED (LIN FT): --
							SAMPLES: 2S
							BORING NO. FOI 204386 B267

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. B268	
PROJECT: ROTH BROS. SHELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION:	
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		DATUM:	
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		START: 30 October 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		FINISH: 30 October 1990	
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through concrete pad to 0.5 ft.		DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
					0.2	-CONCRETE PAD-		
		13	S1	0.5		Very dense red-brown sandy SILT, trace gravel.		
		20	20"/24"	2.5		Same.		
		31				-FILL-		
		2	S2*	2.5	3.0	Loose light brown fine SAND, with layer of dark brown silt, little organics from 3.0 to 3.5 ft.		
		3	23"/24"	4.5		-LACUSTRINE-		
		4				Bottom of Boring at 4.5 ft.		
5								
10								
15								
20								
25								
WATER LEVEL DATA			SAMPLE IDENTIFICATION			SUMMARY		
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 4.5	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --	
							SAMPLES: 2S	
							FOIL 204387 BORING NO. B268	

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B270		
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
ITEM			CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION: DATUM: START: 30 October 1990 FINISH: 30 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
TYPE			Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted				
INSIDE DIAMETER (IN)			4-1/4	1-3/8	---	BIT TYPE: ---				
HAMMER WEIGHT (LB)			---	140	---	DRILL MUD: ---				
HAMMER FALL (IN)			---	30	---	OTHER: Advanced augers through concrete pad to 1.0 ft.				
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS				
						-CONCRETE PAD-				
		3	S1	1.0	1.0	Loose dark brown SILT, little organics.				
		2	19"/24"	3.0	2.3	-LACUSTRINE-				
		3				Loose light brown fine SAND.				
		7	S2	3.0		Same, except medium dense.				
		7	24"/24"	5.0		-LACUSTRINE-				
5		6				Bottom of Boring at 5.0 ft.				
10										
15										
20										
25										
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY		
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0			
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --			
							SAMPLES: 2S			
						BORING NO.		FOIL 27089		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B271	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION:
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		DATUM:
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		START: 31 October 1990
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		FINISH: 31 October 1990
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through concrete pad to 0.5 ft.		DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
		4	S1	0.5	0.5	-CONCRETE PAD-	
		5	14"/24"	2.5		Medium dense dark brown gravelly SILT, little to trace sand, with occasional clinders.	
		7	S2	2.5	3.0	-FILL-	
		6	18"/24"	4.5		Same, except brown and mottled. -FILL-	
		6				Medium dense dark brown sandy SILT, little orgaincs, trace fine gravel.	
		5				-LACUSTRINE-	
		4				Bottom of Boring at 4.5 ft.	
-5-							
-10-							
-15-							
-20-							
-25-							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 4.5 ROCK CORED (LIN FT): -- SAMPLES: 2S
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							BORING NO. FOIL204300 B271

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8272	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 31 October 1990 FINISH: 31 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through asphalt to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		4 7 11 15			1.0	-ASPHALT WITH SUB-BASE-	
			S1	1.0		Medium dense brown gravelly SILT, little sand, with wood fragments.	
			14"/24"	3.0	2.8	-FILL- Medium dense dark brown sandy SILT, little organics. -BURIED TOPSOIL-	
10						Bottom of Boring at 3.0 ft.	
15						Note: 1. Sample S1 submitted for chemical analysis.	
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 3.0
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --
							SAMPLES: 1S
						BORING NO.	FOIL204391 8272

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B274	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 31 October 1990 FINISH: 31 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through concrete pad to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
						-CONCRETE PAD-	
		12	S1	1.0	1.0	Medium dense brown gravelly coarse to fine SAND, with wood fragments. -FILL- Loose dark brown sandy SILT, little organics. -BURIED TOPSOIL- Bottom of Boring at 3.0 ft.	
		10	18"/24"	3.0	1.8		
		9					
		8					
5							
10							
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 3.0 ROCK CORED (LIN FT): -- SAMPLES: 15 BORING NO. FOIL 827493

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B275	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION:
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		DATUM:
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		START: 31 October 1990
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		FINISH: 31 October 1990
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through concrete pad to 1.0 ft.		DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
						-CONCRETE PAD-	
		12	S1	1.0	1.0	Loose gray-brown gravelly coarse to fine SAND, wet.	
		5	3"/24"	3.0	2.5	-FILL-	
		4	S2	3.0		Medium dense dark brown sandy SILT, little organics.	
		4	24"/24"	5.0		Same, except loose.	
		6				-BURIED TOPSOIL-	
5		7				Bottom of Boring at 5.0 ft.	
		10					
10						Note:	
						1. Composite of sample S1 and top 0.5 ft. of sample S2 submitted for chemical analysis.	
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			SUMMARY	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER	OVERBURDEN (LIN FT): 5.0	
						ROCK CORED (LIN FT): --	
						SAMPLES: 2S	
						BORING NO. FOIL 201394	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B276	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 31 October 1990 FINISH: 31 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile 8-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers through concrete pad to 1.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
						-CONCRETE PAD-	
		4	S1	1.0	1.0	Loose gray-brown sandy GRAVEL, wet.	
		4	3"/24"	3.0			
		3					
		2	S2	3.0	3.3	Same. -FILL-	
		4				Medium dense dark brown sandy SILT, little organics.	
		9	24"/24"	5.0	4.5	-BURIED TOPSOIL-	
5		7				Medium dense light brown coarse to medium SAND, trace gravel.	
		11				-LACUSTRINE-	
						Bottom of Boring at 5.0 ft.	
10						Note: 1. Composite of sample S1 and top 0.5 ft. of sample S2 submitted for chemical analysis.	
15							
20							
25							
WATER LEVEL DATA							
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			SAMPLE IDENTIFICATION	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
						O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0 ROCK CORED (LIN FT): -- SAMPLES: 2S
							BORING NO. FOIL 8276895

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B278	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON MARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 1 November 1990 FINISH: 1 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	2-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers to 12.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		5	S1	0.0	3.0	Medium dense dark brown gravelly SILT, little to trace sand, with wood fragments, cinder particles, concrete pieces, and ash.	
		12	24"/24"	2.0		-FILL-	
		13					
		11	S2	2.0		Same.	
		10	24"/24"	4.0		Medium dense light brown medium to fine SAND, trace coarse sand, with occasional layer of silt.	
		11				-LACUSTRINE-	
6		6	S3	4.0	9	Same.	
		10	24"/24"	6.0		Loose brown coarse SAND, trace medium sand, trace gravel, with layer of medium to fine sand from 7.5 to 8.0 ft.	
		4	S4*	6.0		Medium dense light brown coarse to medium SAND.	
		4	18"/24"	8.0			
10		4	S5*	8.0	4	-LACUSTRINE-	
		5	15"/24"	10.0			
		6					
15		5			5	Bottom of Boring at 12.0 ft. Notes: 1. * Sample obtained with 1-3/8 in. I.D. split spoon. 2. Samples S1, S2, and S3 submitted for chemical analysis. 3. Observation well installed in completed boring. See Groundwater Observation Well Report.	
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 12.0 ROCK CORED (LIN FT): -- SAMPLES: 5S
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
			See Groundwater Monitoring Report				BORING NO. FOIL 204397 B278

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B279	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 1 November 1990 FINISH: 1 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers to 10.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		4	S1	0.0	2.0	Medium dense dark brown to brown mottled sandy SILT, trace gravel, with cinder particles. -FILL-	
		8	13"/24"	2.0			
		7					
		2	S2	2.0		Loose dark brown ORGANIC SILT, wet. -LACUSTRINE-	
		2	8"/24"	4.0		Same, except very loose with frequent coarse to medium sandy layers. -LACUSTRINE-	
10		WOH	S3	4.0	6.5	Same.	
		WOH	21"/24"	6.0		Loose light brown coarse to medium sand, with frequent seams and layers of silt.	
		2	S4	6.0		Loose light brown medium SAND, with frequent seams and layers of fine sand, -LACUSTRINE-	
		WOH	24"/24"	8.0			
		6	S5	8.0			
15		3	15"/24"	10.0		Bottom of Boring at 10.0 ft.	
		5					
		7					
20						Note: Observation well installed in completed boring. See Groundwater Observation Well Report.	
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 10.0
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --
See Groundwater Monitoring Report							SAMPLES: 5S
						BORING NO.	FOIL204398 B279

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B280			
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON MARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan			
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION:		
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		DATUM:		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		START: 1 November 1990		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		FINISH: 1 November 1990		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers to 10.0 ft.		DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
<div style="text-align: center;"> <div style="width: 100%; height: 100%; border: 1px solid black; position: relative;"> <div style="position: absolute; top: 0; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 10px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 20px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 30px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 40px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 50px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 60px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 70px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 80px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 90px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 100px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 110px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 120px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 130px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 140px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 150px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 160px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 170px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 180px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 190px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 200px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 210px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 220px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; 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top: 290px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 300px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 310px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 320px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 330px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 340px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; 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top: 530px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 540px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 550px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 560px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 570px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 580px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; 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top: 650px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 660px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 670px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 680px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 690px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 700px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 710px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 720px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 730px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 740px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 750px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 760px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 770px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 780px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 790px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 800px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 810px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 820px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 830px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 840px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 850px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 860px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 870px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 880px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 890px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 900px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 910px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 920px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 930px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 940px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 950px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 960px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> <div style="position: absolute; top: 970px; left: 0; right: 0; height: 10px; background: linear-gradient(to bottom, transparent 49%, black 49%, black 51%, transparent 51%);"></div> </div> </div>	1	S1	0.0	1.0	2.2	Very loose brown gravelly SILT, little sand, with wood fragments. -FILL-			
	1	3"/24"	2.0			Very loose dark brown LOAM. -BURIED TOPSOIL-			
	2	S2	2.0			Loose light brown mottled fine sandy SILT. -LACUSTRINE- Loose light brown SILT, with occasional layers of fine sand. Medium dense light brown fine SAND, with frequent layers of silt from 6.0 to 7.0 ft. Medium dense interbedded light brown medium and fine SAND. -LACUSTRINE- Bottom of Boring at 10.0 ft. Note: Observation well installed in completed boring. See Groundwater Observation Well Report.			
	3	20"/24"	4.0						
	5	S3	4.0						
	5	20"/24"	6.0						
	4	S4	6.0						
	8	24"/24"	8.0						
	9	S5	8.0						
	6	24"/24"	10.0						
8									
6									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 10.0		
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): ---		
See Groundwater Monitoring Report						SAMPLES: 5S		BORING NO. FOIL204399 B280	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B281	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers to 10.0 ft.		
						ELEVATION: DATUM: START: 5 November 1990 FINISH: 5 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
		1	S1	0.0		Very loose brown to dark brown sandy SILT, trace gravel.	
		1					
		2	10"/24"	2.0		Same. -FILL-	
		5	S2	2.0	2.2		
		8	10"/24"	4.0		Medium dense red-brown sandy SILT, trace gravel. -GLACIAL TILL-	
		9				Same.	
		12	S3	4.0			
5		14	18"/24"	6.0		Same, except very dense.	
		16					
		27	S4 9"/9"	6.0-6.8		Same.	
		50/0.3					
		50/0.4	S5 5"/5"	8.0-8.4		-GLACIAL TILL-	
10						Bottom of Boring at 10.0 ft.	
						Note: Observation well installed in completed boring. See Groundwater Observation Well Report.	
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 10.0 ROCK CORED (LIN FT): -- SAMPLES: SS
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
			See Groundwater Level Monitoring Report				BORING NO. 6204400

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. 8282	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 5 November 1990 FINISH: 5 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
TYPE		---	SS	---	RIG TYPE: ---			
INSIDE DIAMETER (IN)		---	1-3/8	---	BIT TYPE: ---			
HAMMER WEIGHT (LB)		---	NA	---	DRILL MUD: ---			
HAMMER FALL (IN)		---	NA	---	OTHER: Advanced split spoon with sledge hammer			
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
			S1	0.0		Dark brown to brown sandy SILT, little to trace gravel, trace organics. <div style="text-align: center;">-FILL-</div>		
			24"/24"	2.0				
						Bottom of Boring at 2.0 ft.		
						Note: Sample S1 submitted for chemical analysis.		
5								
10								
15								
20								
25								
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT):	2.0
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT):	--
							SAMPLES:	1S
							BORING NO.	FOIL282821

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H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8284	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 5 November 1990 FINISH: 5 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		---	SS	---	RIG TYPE: ---		
INSIDE DIAMETER (IN)		---	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	NA	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	NA	---	OTHER: Advanced split spoon with sledge hammer		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
			S1 24"/24"	0.0 2.0		Dark brown to brown sandy SILT, little to trace gravel, trace organics. <div style="text-align: center;">-FILL-</div>	
						Bottom of Boring at 2.0 ft. Note: Sample S1 submitted for chemical analysis.	
5							
10							
15							
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							OVERBURDEN (LIN FT): 2.0 ROCK CORED (LIN FT): -- SAMPLES: 15 BORING NO. 8284

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. B285	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION:	
TYPE		---	SS	---	RIG TYPE: ---		DATUM:	
INSIDE DIAMETER (IN)		---	1-3/8	---	BIT TYPE: ---		START: 5 November 1990	
HAMMER WEIGHT (LB)		---	NA	---	DRILL MUD: ---		FINISH: 5 November 1990	
HAMMER FALL (IN)		---	NA	---	OTHER: Advanced split spoon with sledge hammer		DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
5			S1	0.0		Dark brown to brown sandy SILT, little to trace gravel, trace organics.		
			8"/24"	2.0		-FILL-		
			S2	2.0		Same, except trace gravel.		
			10"/24"	4.0		-FILL-		
10						Bottom of Boring at 4.2 ft.		
15						Note: Composite of samples S1 and S2 submitted for chemical analysis.		
20								
25								
WATER LEVEL DATA			SAMPLE IDENTIFICATION			SUMMARY		
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 2.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --	
							SAMPLES: 2S	
							BORING NO. FOIL204484 8285	

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H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. 8287	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 2 November 1990 FINISH: 2 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers to 10.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
5		12	S1	1.0	1.5	-ASPHALT WITH SUB-BASE- Medium dense gray-brown GRAVEL.	
		9	17"/24"	3.0		Medium dense light brown coarse to fine SAND, trace silt.	
		11	S2	3.0	5.0	Same.	
		12	15"/24"	5.0		-LACUSTRINE-	
		8	S3	5.0		Medium dense red-brown sandy SILT, trace gravel, with layer of coarse to medium sand from 5.3 to 5.5 ft.	
10		7	18"/24"	7.0		-GLACIAL TILL-	
		7					
15		4				Bottom of Boring at 10.0 ft.	
						Notes:	
						1. 40 ppm volatile organic compounds detected inside casing during drilling. 2. Observation well installed in completed boring. See Groundwater Observation Well Report.	
20							
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	SUMMARY
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
			See Groundwater Monitoring Report				OVERBURDEN (LIN FT): 10.0 ROCK CORED (LIN FT): --- SAMPLES: 3S
						BORING NO.	FOIL204406 8287

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B288	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: DATUM: START: 2 November 1990 FINISH: 2 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik
TYPE		Auger	SS	---	RIG TYPE: Mobile B-57, Truck Mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers to 5.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
						-ASPHALT WITH SUB-BASE-	
		15	S1	1.0	2.0	Dense gray-brown sandy GRAVEL, slight black staining at 0.8 ft.	
		16	20"/24"	2.0		Dense light brown sandy SILT.	
		17	S1-B	2.0-3.0		No Recovery.	
		19	NR	3.0		-LACUSTRINE-	
5		10		5.0		Bottom of Boring at 5.0 ft.	
		11				Note: 1. 3 ppm volatile organic compounds detected above soil sample S1. 2. Borehole left open for 2 holes upon completion to record water levels.	
10							
15							
20							
25							
WATER LEVEL DATA			SAMPLE IDENTIFICATION			SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			OVERBURDEN (LIN FT): 5.0	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER	ROCK CORED (LIN FT): --	
11/2/90	1130	1.0	---	5.0	4.2	SAMPLES: 2S	
11/2/90	1230	2.0	---	5.0	4.0	BORING NO. FOIL204407 B288	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B289	
PROJECT: ROTH BROS. SHELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION:	
TYPE		Auger	SS	---	RIG TYPE: Mobile 8-57, Truck Mounted			DATUM:	
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---			START: 2 November 1990	
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			FINISH: 2 November 1990	
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers to 5.0 ft.			DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
		5	S1	1.0	1.3	- ASPHALT WITH SUB-BASE- Medium dense gray-brown coarse SAND, trace gravel.			
		7	14"/24"	3.0		Medium dense dark brown medium sandy GRAVEL, trace silt, with black stained cinders.			
		23	S2	3.0	3.5	- FILL- Same.			
-5		22	12"/24"	5.0		Dense light brown coarse to medium SAND, trace gravel. - LACUSTRINE-			
		14				Bottom of Boring at 5.0 ft.			
		11				Note: 1. No volatile organic compounds detected above background levels within exploration. 2. Borehole left open for 2 hours upon completion to record water levels.			
-10									
-15									
-20									
-25									
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 5.0		
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): --		
11/2/90	1130	2.0	--	5.0	1.4		SAMPLES: 2s		
						BORING NO.		FOIL204408 B289	

[illegible]

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT			BORING NO. 8291	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON, HARGRAVE, DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES			ELEVATION: 406.06 DATUM: NGVD START: 22 January 1991 FINISH: 22 January 1991 DRILLER: B. Waters H&A REP: W. Corrigan
TYPE		Auger	S	---	RIG TYPE: ATV, track-mounted			
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---			
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---			
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers to 13.0 ft.			
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS		
		2	S1	0.0		Very loose brown silty fine SAND, little clay, trace organics, moist.		
		1	10"/24"	2.0		-LACUSTRINE-		
		1						
		1						
-5		4	S2	5.0		Medium dense brown silty fine SAND, wet.		
		5	20"/24"	7.0		-LACUSTRINE-		
		8						
		9						
-10		5	S3	10.0		Medium dense brown fine SAND, trace medium sand, wet.		
		9	19"/24"	12.0		-LACUSTRINE-		
		7						
		7						
-15						Bottom of Boring at 13.0 ft.		
						Notes:		
						1. Installed monitoring well in completed borehole.		
						2. See Overburden Observation Well Report.		
-20								
-25								
WATER LEVEL DATA						SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 13.0 ft.	
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		ROCK CORED (LIN FT): ---	
							SAMPLES: 3s	
							BORING NO. FOIL204410 8291	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B292	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		
TYPE		Auger	S	---	RIG TYPE: Mobile B-56, truck-mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers to 13.0 ft.		
						ELEVATION: 409.50 DATUM: NGVD START: 22 January 1991 FINISH: 22 January 1991 DRILLER: B. Waters H&A REP: M. Corrigan	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
		3	S1	0.0		Loose gray-brown silty fine SAND, little coarse sand, little gravel, with metal fragments, wet.	
		4	14"/24"	2.0		-FILL-	
		4			3.5		
5		2	S2	5.0		Loose yellow-brown fine SAND, trace medium sand, wet.	
		2	12"/24"	7.0		-LACUSTRINE-	
		2					
10		2	S3	10.0		Loose yellow-brown silty fine SAND, wet.	
		4	20"/24"	12.0		-LACUSTRINE-	
		6				Bottom of Boring at 13.0 ft.	
		7				Notes: 1. Installed monitoring well in completed borehole. 2. See Overburden Observation Well Report.	
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 13.0 ft. ROCK CORED (LIN FT): --- SAMPLES: 3S
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
1/21/91	1145	---	12.16 ft.	13.0 ft.	9.98 ft.		BORING NO. FOIL204411 B292
1/22/91	0910	21 hr.	12.16 ft.	13.0 ft.	5.70 ft.		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST BORING REPORT		BORING NO. B293	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.						FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES		ELEVATION: 407.47 DATUM: NGVD START: 22 January 1991 FINISH: 22 January 1991 DRILLER: B. Waters H&A REP: M. Corrigan
TYPE		Auger	S	---	RIG TYPE: ATV, track-mounted		
INSIDE DIAMETER (IN)		4-1/4	1-3/8	---	BIT TYPE: ---		
HAMMER WEIGHT (LB)		---	140	---	DRILL MUD: ---		
HAMMER FALL (IN)		---	30	---	OTHER: Advanced augers to 13.0 ft.		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS	
		WOH WOH 1 2	S1 1"/24"	0.0 2.0		Very loose brown fine SAND, some coarse sand, some gravel, wet. -LACUSTRINE-	
5		3 5 6 7	S2 21"/24"	5.0 7.0		Stiff brown clayey fine SAND, moist. -LACUSTRINE-	
10		3 4 8 8	S3 18"/24"	10.0 12.0		Medium dense brown SILT, with medium to fine sand layer at 11.8 ft., wet. -LACUSTRINE-	
15						Bottom of boring at 13.0 ft.	
20						Notes: 1. Installed monitoring well in completed borehole. 2. See Overburden Observation Well Report.	
25							
WATER LEVEL DATA						SAMPLE IDENTIFICATION	
DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	OVERBURDEN (LIN FT): 13.0 ft. ROCK CORED (LIN FT): --- SAMPLES: 3s
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER		
							BORING NO. FOIL204412 B293

APPENDIX B
Test Pit Reports



H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists			TEST PIT REPORT		TEST PIT NO. 201 FILE NO. 70185-42	
PROJECT: ROTH BROS. SHELTING CORPORATION - PHASE II LOCATION: CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARATT-WOLFF, INC. EQUIPMENT USED: CASE 580K EXTENDAOE					LOCATION: See Plan ELEVATION: EXPLORATION DATE: 2 Nov. 1990 H&A REP.: W. Lanik	

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
				Dark brown sandy SILT, trace gravel, with wood fragments and metal. <div style="text-align: center;">-FILL-</div>	Noted ammonia smell in pit.
	J1	1.5	1.5	<div style="text-align: center;">-ASH- (J1)</div>	
2		2.5	2.5	Dark brown organic SILT (DITCH). Light brown interbedded fine SAND and SILT.	
	J2	2.5-3.0		<div style="text-align: center;">-LACUSTRINE-</div>	
4				Bottom of Exploration from 4.0 to 8.0 ft.	
6					
8					
10					
12					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE		SUMMARY
DATE	TIME*	DEPTH FT	LENGTH 35.0 feet	WIDTH 3.0 feet	DEPTH: 4-8 ft.
11/02/90	1.0	5.0			JAR SAMPLES: 2
			BOULDERS		BAG SAMPLES: -
			8" to 18" DIAMETER: No.	= Vol. cu ft	WATER LEVEL: 5.0 ft.
			Over 18" DIAMETER: No.	= Vol. cu ft	TEST PIT NO. TP201

* Hrs after completed

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				TEST PIT REPORT		TEST PIT NO. 202	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II						FILE NO. 70185-42	
LOCATION: NIXON HARGRAVE DEVANS & DOYLE						LOCATION: See Plan	
CLIENT: PARATT-WOLFF, INC.						ELEVATION:	
CONTRACTOR: CASE 580K EXTENDADOE						EXPLORATION DATE: 2 Nov. 1990	
						H&A REP.: W. Lanik	

SCALE IN FEET	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA CHANGE	DESCRIPTION OF MATERIALS	REMARKS
				Dark brown sandy SILT, trace gravel, with wood fragments, brick pieces, and scrap metal. -FILL-	
-2-					
	J1	2.5-3.0	3.0		
			3.5	DITCH (?)	
-4-				-LACUSTRINE-	
				Light brown fine SAND.	
-6-				Bottom of Exploration from 4.0 to 6.0 ft.	
-8-					
-10-				Length of Trench 20 ft.	
-12-					

WATER LEVEL			APPROXIMATE PIT DIMENSIONS AT SURFACE			SUMMARY	
DATE	TIME*	DEPTH FT	LENGTH 20.0 feet	WIDTH 3.0 feet	DEPTH: 4-6 ft.		
11/02/90	1.0	4.5				JAR SAMPLES: 1	
			BOULDERS			BAG SAMPLES: -	
			8" to 18" DIAMETER: No. = Vol. cu ft			WATER LEVEL: 4.5 ft.	
* Hrs after completed			Over 18" DIAMETER: No. = Vol. cu ft			TEST PIT NO. 19202	

APPENDIX C

Observation Well Reports and Groundwater
Level Monitoring Reports



H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON HARGRAVE DEVANS & DOYLE
CONTRACTOR: PARRATT-WOLFF, INC.
DRILLER: D. RICHMOND RIG TYPE:
INSTALLATION DATE: 31 OCTOBER 1990

FILE NO.: 70185-42
WELL NO.: 8273-OW
LOCATION: See Plan
SHEET: 1 OF 2
INSPECTOR: W. Lanik

Survey

Datum NGVD

Ground

Elevation: 417.00

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-CONCRETE-
1.0 ft.

-CONCRETE- 0.5 ft.

-QUARTZ SAND-

2.0 ft.

-FILL-

5.3 ft.

-BENTONITE
PELLETS-

-BURIED
TOPSOIL-

6.8 ft.

7.7 ft.

-GLACIAL
TILL-

-QUARTZ SAND-

13.5 ft.

Stickup above ground
surface of protective casing.

0.00 ft.

Stickup below ground
surface of riser pipe.

0.32 ft.

Thickness of Surface Seal

0.5 ft.

Type of Surface Seal

Concrete/Bentonite

[Indicated all seals showing depth,
thickness and type]

Type of Protective Casing

Roadway Box

Inside Diameter of Protective Casing

9.0 in.

Depth of Bottom of Protective Casing

0.6 ft.

Inside Diameter of Riser Pipe

2.0 in.

Type of Backfill Around Riser

Quartz Sand

Diameter of Borehole

8.0 in.

Type of coupling (threaded, welded, etc.)

Threaded

Depth of Bottom of Riser

8.8 ft.

Type of Wellscreen

PVC

Screen Slot Size

0.01 in.

Diameter of Wellscreen

2.0 in.

Type of Backfill Around Wellscreen

Quartz Sand

Depth of Bottom of Wellscreen

13.5 ft.

Depth of Bottom of Borehole

13.5 ft.

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

PAGE NO. 2

FOIL204418

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON MARGRAVE DEVANS & DOYLE
CONTRACTOR: PARRATT-WOLFF, INC.
DRILLER: D. RICHMOND RIG TYPE:
INSTALLATION DATE: 1 NOVEMBER 199

FILE NO.: 70185-42
WELL NO.: B277-OW
LOCATION: See Plan
SHEET: 1 OF 2
INSPECTOR: W. Lanik

Survey Datum <u>MGVD</u>		Stickup above ground surface of protective casing.		<u>3.00 ft.</u>
Ground Elevation: <u>413.81</u>		Stickup above ground surface of riser pipe.		<u>2.82 ft.</u>
S U M M A R I Z E S t o o I s c a o l n e d i t i o n s	-FILL- 0.5 ft.	-CONCRETE- 2.0 ft.	Thickness of Surface Seal	<u>3.4 ft.</u>
	-GLACIAL TILL- 4.8 ft.		Type of Surface Seal [Indicated all seals showing depth, thickness and type]	<u>Concrete/ Bentonite</u>
	-BENTONITE PELLETS- 3.4 ft.	Type of Protective Casing	<u>Steel Protective</u>	
		Inside Diameter of Protective Casing	<u>4.0 in.</u>	
	-LACUSTRINE- 9.8 ft.	-QUARTZ SAND- 9.8 ft.	Depth of Bottom of Protective Casing	<u>1.3 ft.</u>
			Inside Diameter of Riser Pipe	<u>2.0 in.</u>
			Type of Backfill Around Riser	<u>Quartz Sand</u>
			Diameter of Borehole	<u>8.0 in.</u>
			Type of coupling (threaded, welded, etc.)	<u>Threaded</u>
			Depth of Bottom of Riser	<u>4.45 ft.</u>
			Type of Wellscreen	<u>PVC</u>
			Screen Slot Size	<u>0.01 in.</u>
			Diameter of Wellscreen	<u>2.0 in.</u>
			Type of Backfill Around Wellscreen	<u>Quartz Sand</u>
			Depth of Bottom of Wellscreen	<u>9.45 ft.</u>
			Depth of Bottom of Borehole	

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

PAGE NO. 2

FOIL204420

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON MARGRAVE DEVANS & DOYLE
CONTRACTOR: PARRATT-WOLFF, INC.
DRILLER: D. RICHMOND RIG TYPE:
INSTALLATION DATE: 1-2 NOVEMBER 1990

FILE NO.: 70185-42
WELL NO.: B278-OW
LOCATION: See Plan
SHEET: 1 OF 2
INSPECTOR: W. Lanik

Survey Datum <u>NGVD</u>			Stickup above ground surface of protective casing.	<u>2.60 ft.</u>
Ground Elevation: <u>409.64</u>			Stickup above ground surface of riser pipe.	<u>2.40 ft.</u>
S U M M A R I Z E S S t o o l s c a l i n e s I n s t i t u t i o n s	-FILL-	-CONCRETE-	Thickness of Surface Seal	<u>6.0 ft.</u>
		2.0 ft.	Type of Surface Seal [indicated all seals showing depth, thickness and type]	<u>Concrete/ Bentonite</u>
	3.0 ft.		Type of Protective Casing	<u>Steel Protective</u>
		-BENTONITE PELLETS-	Inside Diameter of Protective Casing	<u>4.0 in.</u>
		6.0 ft.	Depth of Bottom of Protective Casing	<u>1.7 ft.</u>
	-LACUSTRINE-		Inside Diameter of Riser Pipe	<u>2.0 in.</u>
			Type of Backfill Around Riser	<u>Quartz Sand</u>
			Diameter of Borehole	<u>8.0 in.</u>
			Type of coupling (threaded, welded, etc.)	<u>Threaded</u>
			Depth of Bottom of Riser	<u>8.1 ft.</u>
		-QUARTZ SAND-	Type of Wellscreen	<u>PVC</u>
		12.7 ft.	Screen Slot Size	<u>0.01 in.</u>
			Diameter of Wellscreen	<u>2.0 in.</u>
			Type of Backfill Around Wellscreen	<u>Quartz Sand</u>
			Depth of Bottom of Wellscreen	<u>12.7 ft.</u>
			Depth of Bottom of Borehole	<u>12.7 ft.</u>

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

PAGE NO. 2

FOIL204422

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON HARGRAVE DEVANS & DOYLE
CONTRACTOR: PARRATT-WOLFF, INC.
DRILLER: D. RICHMOND RIG TYPE:
INSTALLATION DATE: 1 NOVEMBER 1990

FILE NO.: 70185-42
WELL NO.: B279-OW
LOCATION: See Plan
SHEET: 1 OF 2
INSPECTOR: W. Lanik

Survey

Datum NGVD

Ground

Elevation: 410.70

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		0.0 ft.
	-FILL-	-CONCRETE-
2.0 ft.		2.0 ft.
		-BENTONITE PELLETS-
		4.0 ft.
	-LACUSTRINE-	
		-QUARTZ SAND-
		10.0 ft.

Stickup above ground surface of protective casing.	2.70 ft.
Stickup above ground surface of riser pipe.	2.49 ft.
Thickness of Surface Seal	4.0 ft.
Type of Surface Seal (indicated all seals showing depth, thickness and type)	Concrete/Bentonite
Type of Protective Casing	Steel Protective
Inside Diameter of Protective Casing	4.0 in.
Depth of Bottom of Protective Casing	1.6 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Quartz Sand
Diameter of Borehole	8.0 in. +/-
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	5.15 ft.
Type of Wellscreen	PVC
Screen Slot Size	0.01 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Quartz Sand
Depth of Bottom of Wellscreen	9.95 ft.
Depth of Bottom of Borehole	10.0 ft.

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

PAGE NO. 2

FOIL204424

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON HARGRAVE DEVANS & DOYLE
CONTRACTOR: PARRATT-WOLFF, INC.
DRILLER: D. RICHMOND RIG TYPE:
INSTALLATION DATE: 1 NOVEMBER 1990

FILE NO.: 70185-42
WELL NO.: B280-OW
LOCATION: See Plan
SHEET: 1 OF 2
INSPECTOR: W. Lanik

Survey

Datum NGVD

Ground

Elevation: 407.21

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-FILL-	0.0 ft.
1.0 ft.	-CONCRETE-
BURIED -TOPSOIL-	2.0 ft.
2.2 ft.	-BENTONITE PELLETS-
4.0 ft.	-QUARTZ SAND-
-LACUSTRINE-	10.0 ft.

Stickup above ground surface of protective casing.	3.00 ft.
Stickup above ground surface of riser pipe.	2.80 ft.
Thickness of Surface Seal	4.0 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Concrete/Bentonite
Type of Protective Casing	Steel Protective
Inside Diameter of Protective Casing	4.0 in.
Depth of Bottom of Protective Casing	1.3 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Quartz Sand
Diameter of Borehole	8.0 in. +/-
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	5.72 ft.
Type of Wellscreen	PVC
Screen Slot Size	0.01 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Quartz Sand
Depth of Bottom of Wellscreen	9.72 ft.
Depth of Bottom of Borehole	10.0 ft.

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

FILE NO. 70185-42
PAGE NO. 2

FOIL204426

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON HARGRAVE DEVANS & DOYLE
CONTRACTOR: PARRATT-WOLFF, INC.
DRILLER: D. RICHMOND RIG TYPE:
INSTALLATION DATE: 5 NOVEMBER 1990

FILE NO.: 70185-42
WELL NO.: B281-OW
LOCATION: See Plan
SHEET: 1 OF 2
INSPECTOR: W. Lanik

Survey

Datum NGVD

Ground

Elevation: 420.13

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-FILL-	0.0 ft.
	-CONCRETE-
2.2 ft.	2.0 ft.
-GLACIAL TILL-	-BENTONITE PELLETS-
	4.0 ft.
-GLACIAL TILL-	-QUARTZ SAND-
	10.0 ft.

Stickup above ground surface of protective casing.	3.32 ft.
Stickup above ground surface of riser pipe.	3.10 ft.
Thickness of Surface Seal	4.0 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Concrete/Bentonite
Type of Protective Casing	Steel Protective
Inside Diameter of Protective Casing	4.0 in.
Depth of Bottom of Protective Casing	1.0 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Quartz Sand
Diameter of Borehole	8.0 in. +/-
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	4.80 ft.
Type of Wellscreen	PVC
Screen Slot Size	0.01 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Quartz Sand
Depth of Bottom of Wellscreen	9.90 ft.
Depth of Bottom of Borehole	10.0 ft.

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

GROUND/TOP OF CASING ELEVATION: 420.13/423.23

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FOIL204428

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON MARGRAVE DEVANS & DOYLE
CONTRACTOR: PARRATT-WOLFF, INC.
DRILLER: D. RICHMOND RIG TYPE:
INSTALLATION DATE: 5 NOVEMBER 1990

FILE NO.: 70185-42
WELL NO.: B286-OW
LOCATION: See Plan
SHEET: 1 OF 2
INSPECTOR: W. Lanik

Survey

Datum NGVD

Ground

Elevation: 414.24

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-FILL-
0.5 ft.

0.0 ft.

-CONCRETE-

2.0 ft.

-BENTONITE
PELLETS-

4.0 ft.

-GLACIAL
TILL-

-QUARTZ
SAND-

10.0 ft.

Stickup above ground
surface of protective casing.

2.35 ft.

Stickup above ground
surface of riser pipe.

2.10 ft.

Thickness of Surface Seal

4.0 ft.

Type of Surface Seal

[Indicated all seals showing depth,
thickness and type]

Concrete/Bentonite

Type of Protective Casing

Steel Protective

Inside Diameter of Protective Casing

4.0 in.

Depth of Bottom of Protective Casing

1.95 ft.

Inside Diameter of Riser Pipe

2.0 in.

Type of Backfill Around Riser

Quartz Sand

Diameter of Borehole

8.0 in. +/-

Type of coupling (threaded, welded, etc.)

Threaded

Depth of Bottom of Riser

4.47 ft.

Type of Wellscreen

PVC

Screen Slot Size

0.01 in.

Diameter of Wellscreen

2.0 in.

Type of Backfill Around Wellscreen

Quartz Sand

Depth of Bottom of Wellscreen

9.47 ft.

Depth of Bottom of Borehole

10.0 ft.

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

FILE NO. 70185-42
PAGE NO. 2

FOIL204430

N&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON HARGRAVE DEVANS & DOYLE
CONTRACTOR: PARRATT-WOLFF, INC.
DRILLER: D. RICHMOND RIG TYPE:
INSTALLATION DATE: 2 NOVEMBER 1990

FILE NO.: 70185-42
WELL NO.: B287-OW
LOCATION: See Plan
SHEET: 1 OF 2
INSPECTOR: W. Lanik

Survey
Datum NGVD

Ground
Elevation: 412.98

SUMMARY In Zones Stools Ls c Ca OL Ne D I T I O NS	ASPHALT WITH GRAVEL SUB-BASE	0.0 ft.		Thickness of Surface Seal	0.5 ft.
		-CONCRETE-		Type of Surface Seal [indicated all seals showing depth, thickness and type]	Concrete/Bentonite
		0.5 ft.		Type of Protective Casing	Roadway Box
	1.5 ft.	-QUARTZ SAND-	Inside Diameter of Protective Casing	9.0 in.	
		-BENTONITE PELLETS-	Depth of Bottom of Protective Casing	0.6 ft.	
			-LACUSTRINE-	Inside Diameter of Riser Pipe	2.0 in.
	2.5 ft.			Type of Backfill Around Riser	Quartz Sand
		5.0 ft.		Diameter of Borehole	8.0 in. +/-
			-QUARTZ SAND-	Type of coupling (threaded, welded, etc.)	Threaded
	-GLACIAL TILL-			Depth of Bottom of Riser	2.95 ft.
		10.0 ft.		Type of Wellscreen	PVC
				Screen Slot Size	0.01 in.
				Diameter of Wellscreen	2.0 in.
				Type of Backfill Around Wellscreen	Quartz Sand
				Depth of Bottom of Wellscreen	9.95 ft.
	Depth of Bottom of Borehole			10.0 ft.	

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

FILE NO. 70185-42
PAGE NO. 2

FOIL204432

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON HARGRAVE DEVANS & DOYLE
CONTRACTOR: PARRATT-WOLFF, INC.
DRILLER: D. RICHMOND RIG TYPE:
INSTALLATION DATE: 5-6 NOVEMBER 1990

FILE NO.: 70185-42
WELL NO.: 8290-OW
LOCATION: See Plan
SHEET: 1 OF 2
INSPECTOR: W. Lanik

Survey Datum <u>NGVD</u>			Stickup above ground surface of protective casing.	<u>2.90 ft.</u>
Ground Elevation: <u>411.70</u>			Stickup above ground surface of riser pipe.	<u>2.80 ft.</u>
S U M M A R I Z E d S t o o l s c a o l n e d I T I O N S	-FILL-	0.0 ft.	Thickness of Surface Seal	<u>1.5 ft.</u>
		-CONCRETE- 0.5 ft.		
		-BENTONITE PELLETS- 1.5 ft.	Type of Protective Casing	<u>Steel Protective</u>
	2.3 ft.		Inside Diameter of Protective Casing	<u>4.0 in.</u>
			Depth of Bottom of Protective Casing	<u>1.4 in.</u>
	-LACUSTRINE-	-QUARTZ SAND-	Inside Diameter of Riser Pipe	<u>2.0 in.</u>
			Type of Backfill Around Riser	<u>Quartz Sand</u>
	4.0 ft.		Diameter of Borehole	<u>8.0 in. +/-</u>
			Type of coupling (threaded, welded, etc.)	<u>Threaded</u>
	-GLACIAL TILL-		Depth of Bottom of Riser	<u>1.7 ft.</u>
			Type of Wellscreen	<u>PVC</u>
			Screen Slot Size	<u>0.01 in.</u>
			Diameter of Wellscreen	<u>2.0 in.</u>
			Type of Backfill Around Wellscreen	<u>Quartz Sand</u>
10.5 ft.			Depth of Bottom of Wellscreen	<u>10.4 ft.</u>
		Depth of Bottom of Borehole	<u>10.5 ft.</u>	

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

FILE NO. 70185-42
PAGE NO. 2

FOIL204434

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORP. - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON, HARGRAVE, DEVANS AND DOYLE
CONTRACTOR: PARRATT-WOLF, INC.
DRILLER: B. WATERS RIG TYPE: ATV, TRACK-MOUNTED
INSTALLATION DATE: 22 JANUARY 1991

FILE NO.: 70185-42
WELL NO.: B291-OW
LOCATION: SEE PLAN
SHEET: 1 OF 2
H&A REP: M. CORRIGAN

Survey

Datum MGVD

Ground

Elevation: 406.06

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-LACUSTRINE-

-CONCRETE-

3.0 ft.

-BENTONITE
PELLETS-

5.0 ft.

-QUARTZ
SAND-

13.0 ft.

Stickup above ground
surface of protective casing.

2.00 ft.

Stickup above ground
surface of riser pipe.

1.75 ft.

Thickness of Surface Seal

5.0 ft.

Type of Surface Seal

[indicated all seals showing depth,
thickness and type]

Concrete/Bentonite

Type of Protective Casing

Steel Protective

Inside Diameter of Protective Casing

4.0 in.

Depth of Bottom of Protective Casing

2.0 ft.

Inside Diameter of Riser Pipe

2.0 in.

Type of Backfill Around Riser

Quartz Sand

Diameter of Borehole

4.0 in.

Type of coupling (threaded, welded, etc.)

Threaded

Depth of Bottom of Riser

7.48 ft.

Type of Wellscreen

PVC

Screen Slot Size

0.01 in.

Diameter of Wellscreen

2.0 in.

Type of Backfill Around Wellscreen

Quartz Sand

Depth of Bottom of Wellscreen

12.48 ft.

Depth of Bottom of Borehole

13.0 ft.

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

FILE NO. 70185-42
PAGE NO. 2 OF 2

FOIL204436

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORP. - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON, HARGRAVE, DEVANS AND DOYLE
CONTRACTOR: PARRATT-WOLF, INC.
DRILLER: B. WATERS RIG TYPE: MOBILE B-56, TRUCK-MOUNTED
INSTALLATION DATE: 22 JANUARY 1991

FILE NO.: 70185-42
WELL NO.: B292-OW
LOCATION: SEE PLAN
SHEET: 1 OF 2
H&A REP: M. CORRIGAN

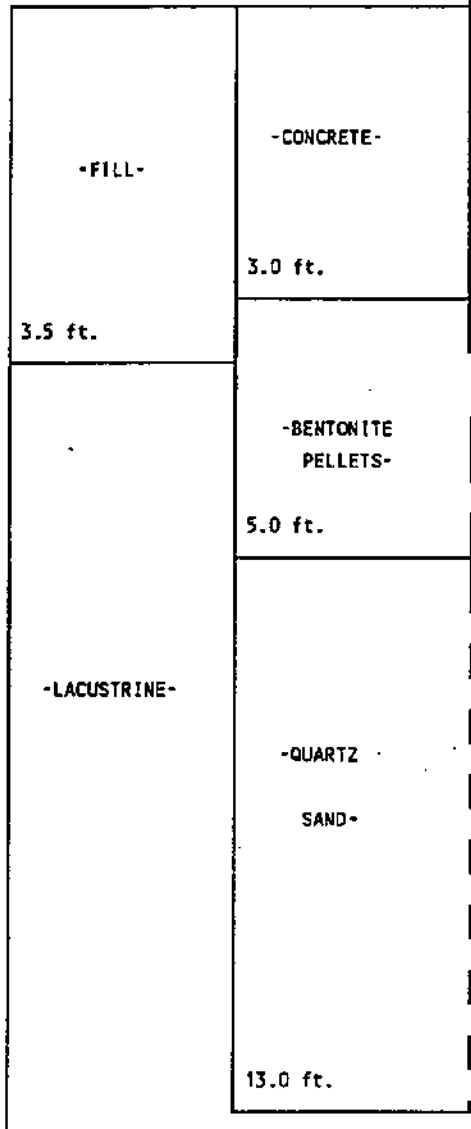
Survey

Datum NGVD

Ground

Elevation: 409.50

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Stickup above ground surface of protective casing.	2.30 ft.
Stickup above ground surface of riser pipe.	2.11 ft.
Thickness of Surface Seal	5.0 ft.
Type of Surface Seal [indicated all seals showing depth, thickness and type]	Concrete/Bentonite
Type of Protective Casing	Steel Protective
Inside Diameter of Protective Casing	4.0 in.
Depth of Bottom of Protective Casing	1.7 ft.
Inside Diameter of Riser Pipe	2.0 in.
Type of Backfill Around Riser	Quartz Sand
Diameter of Borehole	4.0 in.
Type of coupling (threaded, welded, etc.)	Threaded
Depth of Bottom of Riser	7.16 ft.
Type of Wellscreen	PVC
Screen Slot Size	0.01 in.
Diameter of Wellscreen	2.0 in.
Type of Backfill Around Wellscreen	Quartz Sand
Depth of Bottom of Wellscreen	12.16 ft.
Depth of Bottom of Borehole	13.0 ft.

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

TOP OF CASING ELEVATION: 411.61

PAGE NO. 2 OF 2

FOIL204438

H&A OF NEW YORK
CONSULTING GEOTECHNICAL ENGINEERS
GEOLOGISTS AND HYDROGEOLOGISTS

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT: ROTH BROS. SMELTING CORP. - PHASE II
LOCATION: EAST SYRACUSE, NEW YORK
CLIENT: NIXON, HARGRAVE, DEVANS AND DOYLE
CONTRACTOR: PARRATT-WOLF, INC.
DRILLER: B. WATERS RIG TYPE: ATV, TRACK-MOUNTED
INSTALLATION DATE: 22 JANUARY 1991

FILE NO.: 70185-42
WELL NO.: 8293-OW
LOCATION: SEE PLAN
SHEET: 1 OF 2
H&A REP: M. CORRIGAN

Survey

Datum NGVD

Ground

Elevation: 407.47

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-LACUSTRINE-

-CONCRETE-

3.0 ft.

-BENTONITE
PELLETS-

5.0 ft.

-QUARTZ

SAND-

13.0 ft.

Stickup above ground
surface of protective casing.

1.82 ft.

Stickup above ground
surface of riser pipe.

1.63 ft.

Thickness of Surface Seal

5.0 ft.

Type of Surface Seal

Concrete/Bentonite

[Indicated all seals showing depth,
thickness and type]

Type of Protective Casing

Steel Protective

Inside Diameter of Protective Casing

4.0 in.

Depth of Bottom of Protective Casing

2.18 in.

Inside Diameter of Riser Pipe

2.0 in.

Type of Backfill Around Riser

Quartz Sand

Diameter of Borehole

4.0 in.

Type of coupling (threaded, welded, etc.)

Threaded

Depth of Bottom of Riser

7.26 ft.

Type of Wellscreen

PVC

Screen Slot Size

0.01 in.

Diameter of Wellscreen

2.0 in.

Type of Backfill Around Wellscreen

Quartz Sand

Depth of Bottom of Wellscreen

12.26 ft.

Depth of Bottom of Borehole

13.0 ft.

Remarks:

GROUNDWATER LEVEL MONITORING REPORT

TOP OF CASING ELEVATION: 409.10

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FOIL204440